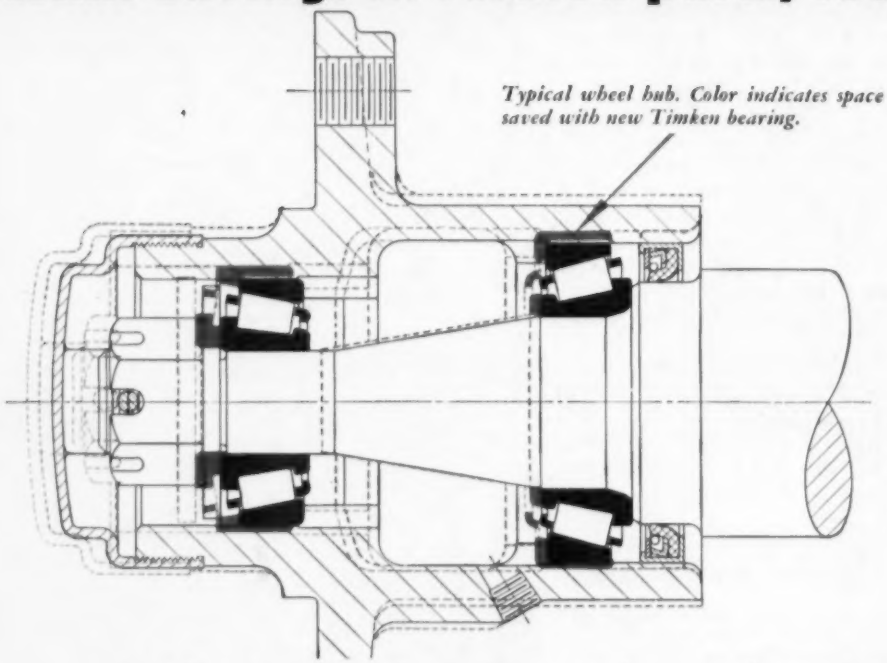
the IronAge
A Chilton Publication
THE NATIONAL METALWORKING WEEKLY • MAY 5, 1955

How does the A-blast affect your product? See page 59

Three new TIMKEN® bearings cost less, permit savings in related parts, too



New capacity-packed bearings take up less space than previous designs of same bore sizes

THREE new Timken® tapered roller bearings are now available in bore sizes of ¾", 1¼" and 1⅜". And they cost less than previous bearings of the same bore sizes. Because they take up less space and weigh less, they permit application designs that save in related parts, too. And never has so much bearing capacity been packed into so little space.

These new Timken bearings offer exciting opportunities for savings through redesign of present tapered roller bearing applications. One example is shown in the above diagram of a typical wheel hub. Seals can be smaller and cheaper, hubs can require less metal and less machining, spindles can be made shorter and less costly to machine. All these savings are in addition to the lower cost of the bearings themselves.

Many engineers have already taken advantage of these possibilities and well over 1,000,000 of the new bearings are proving themselves in automobile front wheels and other applications.

The new Timken bearings also make it possible for you to enjoy the advantages of tapered roller bearings in many new applications—and at minimum cost.

Auxiliary parts for use with the new Timken bearings are available from the Timken Company and major closure manufacturers. For full information on the new low-cost Timken bearings and help in designing them into your product, write today to The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN ... your number 1 bearing **VALUE**
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL AND THRUST —⊕— LOADS OR ANY COMBINATION

TRAMBEAM

speeds production at

WESTINGHOUSE

jet engine plant

Here's why jet engine production moves fast at the Westinghouse plant in Kansas City, Missouri! Used in *seven* departments, Trambeam Overhead Handling Systems simplify tool movement to and from machines and speed handling of parts-in-process between machines or to temporary storage. Output per man and per machine is high. Plant areas are *fully* utilized. The need for floor-borne handling equipment is reduced, and traffic bottlenecks are prevented. At Westinghouse, flexible Trambeam is always available when needed, where needed . . . easily push-button operated by one man. Look to Trambeam for your own handling needs!

An interesting and informative case study has been prepared on the Trambeam installation at Westinghouse. Send for your free copy today, and the name of your Trambeam distributor.

TRAMBEAM
Dollar-wise Features

- Cranes for complete area coverage . . . monorail for point-to-point transport.
- High carbon rails assure long life operation.
- Flexible suspension minimizes bending fatigue and keeps load stress vertical.
- Friction-reducing carrier design has Timken double row, tapered roller bearings.
- Underhung carriers provide maximum headroom, greater speed and improved control.
- Capacities up to 15 tons with full motorization.

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Trackmobile • Overhead Engineered Cranes • Electric Furnaces and other types of Foundry Equipment • Chemical Processing Equipment, such as Evaporators and Spray Dryers • Railroad Equipment and Metal-cutting Machinery



WHITING
TRAMBEAM

Here Trambeam is used to quickly move a packed jet engine to the shipping department . . . one of the seven Trambeam equipped departments at Westinghouse.



We helped make this hammer a smashing success

One of today's hottest hardware items is the True Temper Rocket, a new type of hammer that is guaranteed by the manufacturer to be indestructible in normal use.

In forging that hard-hitting head the True Temper people are using very substantial quantities of hot-rolled high-carbon bars of C-1078 steel supplied by Bethlehem. They put the forged head through a series of heat-treating operations that tempers the three critical zones—the striking face, the claws and the head—giving each one the exact combination of strength, hardness and toughness that it needs. Finally the entire head is polished to a lustrous finish.

These operations call for good, sound bar stock, the kind that so many prominent manufacturers, like True Temper Corporation, know they can count on from Bethlehem.

If your product requires hot-rolled carbon-steel bars, why not call on Bethlehem? Our carbon-steel bar products include standard sections, special sections and bar-size shapes. Also semi-finished carbon-steel products, including blooms, billets and slabs.

We suggest that you place your order with the Bethlehem sales office nearest you.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

the Iron Age

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Vol. 175, No. 18, May 5, 1955

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Copyright 1955, by Chilton Co. (Inc.)

THE IRON AGE, published every Thursday, with an additional issue in June, by CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. Price to the metalworking industries only, or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $15; other Foreign Countries, $25 per year. Single copies, 50¢. Annual Review Issue, $2.00. Cables: "Ironage," N. Y.

Address mail to 100 E. 42 St., N. Y. 17, N. Y.

NEWS DEVELOPMENTS

TEAMWORK MARKS A-BLAST PREPARATIONS — P. 59
Most significant feature of the nuclear blast, Operation Cue, has been the cooperation of government, industry and labor. With bad weather causing repeated postponements, key company and U. S. officials stood by patiently. Industry has spent more than $1 million on test preparations and time loss can't be estimated dollarwise. A few of the practical projects of the operation include: industrial shelters, tool sheds, electrical systems and broadcast towers.

EARTHMOVING EQUIPMENT GETS MORE POWER—P. 62
Builders of earthmoving units are entering power race. The industry is enjoying good business which in turn will aid steel producers. New and better steels are a factor in increased efficiency of heavy equipment. More powerful machines are reducing excavation costs.

WHAT'S MAKING BUSINESS SO VERY GOOD? — P. 63
Government has just finished giving the economy its regular first quarter checkup and the report is excellent. Economy is headed for a best-ever year. Possible slowdown in automotive pace will be offset by higher than anticipated outlays for new plant and equipment and a continued rise in the already strong consumer spending rate.

STEEL EARNINGS REACH FOR THE CLOUDS — P. 64
First quarter earnings of steel producers are up nearly 60 pct over same period of 1954. Expansion, prices, and labor share spotlight as steel leaders view outlook with optimism. New round of expansion felt to be necessary. Producers attribute good showing to top management, new equipment, and product mix.

AIR FORCE HEAVY PRESS PROGRAM ROLLS — P. 66
$280 million program gets underway with ALCOA completing first installation. One 50,000-ton unit is biggest to date. Program means big savings in cost and weight in aircraft construction. Reds had head start with confiscated German equipment.

CARE AND FEEDING OF YOUNG ENGINEERS — P. 68
Professional societies make six-point recommendation based on results of survey. Need for closer attention to supervision and guidance is cited. Industry also urged to broaden engineer training to include areas not specifically related to the field. A greater interchange of information among employers needed.

IN METALWORKING

ENGINEERING & PRODUCTION

CHECK BILLETS BY MAGNETIC TECHNIQUE — P. 99
Inspection of billets, using magnetized particles and ultraviolet light to detect flaws, has a number of benefits—in time, cost and labor. Probably the most important is the better quality and fewer rejects in finished products. Pickling is eliminated entirely. The system is positive, efficient and economical.

DUAL SYSTEM NEUTRALIZES ALL WASTES — P. 102
The first fully automatic waste disposal system in the automobile industry destroys cyanides and neutralizes acid-alkali waste from the plating and metal stripping operations. An elaborate system of automatic controllers, alarms and pumps has been included to assure trouble-free operation. Automatic recorders provide continuous records of all discharged effluent.

NEW LINE HEAT TREATS WIDE STEEL PLATE — P. 105
Continuous heat treating of wide steel plate on a new integrated furnace and quench press line gives Lukens Steel high efficiency in its heat treating operations. The line handles plate to 130 in. wide and 40 ft long. Use of major material handling devices reduces the overall processing time. Quality is easier to maintain.

FURNACE TYPES DICTATE DUST CONTROLS — P. 110
Uncontrolled emissions of dusts and fumes from gray iron cupolas can add to community "smog" problems. With proper control methods, air contamination can be reduced more than 95 pct. Some foundries use electrical precipitators or baghouses. Others have abandoned cupolas for reverberatory or electric furnaces.

BETTER WHEEL BALANCE AIDS GRINDING — P. 113
Closer accuracy, faster correction and lower handling costs are gained by dynamically balancing grinding wheels. Straight wheels from 6 to 14 in. diam and ¼ to 2 in. thick can be balanced to less than 1/16 oz.

MARKETS & PRICES

SMELTERS BELIEVE MARKET WILL REMAIN FIRM—P. 65
In spite of price fluctuations and recent tendency on part of buyers to hold off, smelters believe their markets will remain firm. Consumer stocks on most metals are low. See 14 pct jump in lead use.

AMERICAN MOTORS BETS ON TWO-CAR FAMILY—P. 76
Rambler line is intended to fill need for second car for utility purposes. Romney announces new program to improve company's production facilities. AMC now working in black for first time since Nash-Hudson merger. Labor contract extended until after Ford and GM finish negotiations.

MACHINE TOOLS HOLD EARLY FAST PACE — P. 87
For the 4th straight month, machine tool new orders topped the $60 million mark. First quarter showing is in sharp contrast with last year's business. Shipments are picking up in response to the order spurt and builders are smiling, but no one knows exactly who is buying added equipment.

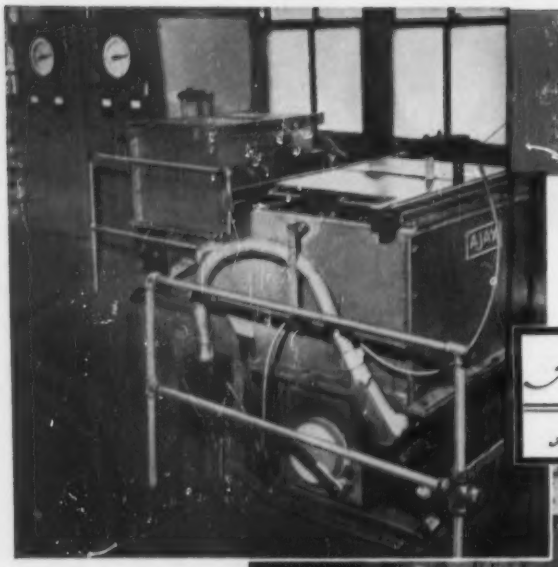
STEEL LABOR HOLDS STRONG HAND — P. 155
United Steelworkers will take a tough attitude in current wage negotiations. Current steel prosperity puts labor in a good position to push for substantial pay raise. Union may settle at 8¢ to 10¢ an hour, but will put up a tough fight for more. Issues are limited to hours, eliminating any hassle on complex issues. Both sides appear friendly and attitude of industry and labor indicates no strike.

STEEL INVENTORIES LACK BALANCE — P. 156
Inventory imbalance is a chronic headache for most steel consumers. Competition for most products prevents much inventory buildup. Spot shortages send buyers to warehouses and other high cost sources. No drop in automotive orders in sight. Appliance will take up any slack. Plates may be tightest product.

NEXT WEEK:

PROPER HANDLING DEVICES AID IN BATCH PICKLING
Pickling equipment must have high strength-to-weight ratios, superior resistance to acids. Well-designed, corrosion-resistant devices simplify work handling and permit greater payloads. Carriers have been developed for all common pickling operations. Many are ready-made while others are designed for unusual jobs.

MIDWEST SCRAP MARKET IN MARKET PARADOX
In spite of record mill production of steel, scrap in Midwest market shows tendency to ease in demand. Reasons are full utilization of blast furnaces for hot metal, record generation of scrap from booming automobile plants. Home scrap is also up because of emphasis on flat-rolled production.



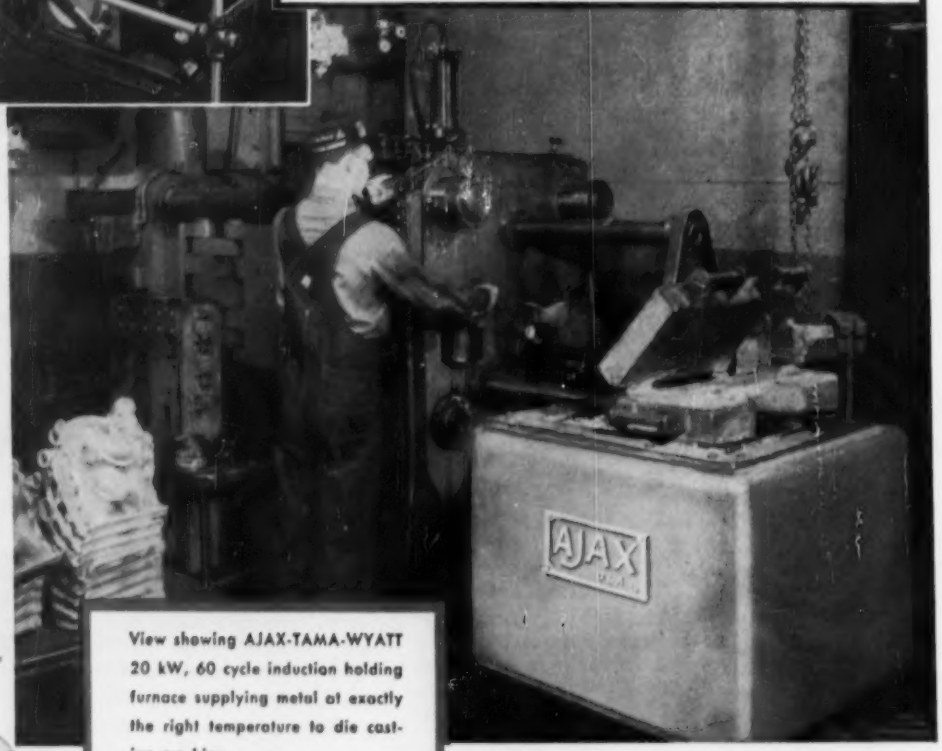
View shows AJAX melting furnaces, with control cabinets in background.

AJAX INDUCTION FURNACES

mean Higher Quality Castings for...

Advance
TOOL & DIE CASTING COMPANY

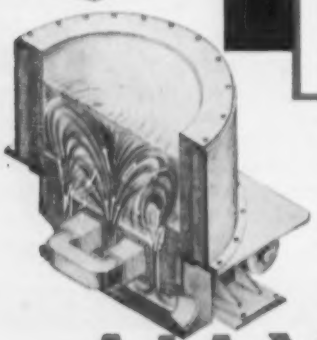
Aluminum DIE CASTINGS *Zinc Base*



View showing AJAX-TAMA-WYATT 20 kW, 60 cycle induction holding furnace supplying metal at exactly the right temperature to die casting machines.

The Furnace That Stirs Itself...

The sectional view below shows the twin-coil stirring action of the 100 kW, 60 cycle AJAX Induction Furnace. Heat induced in the secondary channels below is conveyed throughout the melt by electro-magnetic circulation, as shown by the arrows.



Inherent stirring action of these furnaces has proved most valuable to ADVANCE TOOL & DIE CASTING CO., Milwaukee, Wisc. In full operation for 18 months, the most important results of the use of these furnaces is higher quality die cast aluminum parts. The alloy is held in uniform solution resulting in elimination of oxides, reducing hard spot trouble in secondary machining to a negligible factor. Temperature of the melt is held at 1170° F. through on-off control of the low power circuit. Working conditions are made more comfortable because of low heat losses. The units take up very little floor space.

AJAX

AJAX ENGINEERING CORP., TRENTON 7, N. J.

INDUCTION MELTING FURNACE

TAMA-WYATT

AJAX ELECTRO METALLURGICAL CORP., and Associated Companies
AJAX ELECTROTHERMIC CORP., Ajax Northrup High Frequency Induction Furnaces
AJAX ELECTRIC CO., The Ajax Hultgren Electric Salt Bath Furnace
AJAX ELECTRIC FURNACE CORP., Ajax Wyatt Induction Furnaces for Melting

The handling ease of an ATLAS Sling means . . .

safe, fast, low-cost material lifting!

A SLING DESIGNED TO HANDLE EASILY WILL HELP YOU HANDLE LOADS faster. That's the reason why flexibility, lightness, and *handling ease are results of the basic design* of Macwhyte ATLAS Round-Braided Slings.

Here's how handling ease is built into the ATLAS Sling: All ropes in ATLAS Slings are braided in a continuous spiral path. Ropes are endless—all ropes in the body are the same length and carry an equal share of the load. There are two pairs of Left Lay, and two pairs of Right Lay ropes—making a total of eight ropes in the equally balanced braided body of the Sling.

Users can attach ATLAS Slings faster because of their "built-in" handling ease. And these Slings last longer because they do not snarl, kink, or curl up as easily as ordinary slings.

The Macwhyte Sling Catalog illustrates many standard designs in Round-Braided, Flat-Braided, Single-Part, and Grommet Slings.

Recommendations for special designs will be supplied by Macwhyte Sling Engineers.

Call a Macwhyte distributor or Macwhyte office:

MACWHYTE COMPANY
2911 Fourteenth Ave., Kenosha, Wis.

Ask for Sling Catalog S-8



Handling bed casting for 2500-ton forging press are two Macwhyte ATLAS Type 1 Round-Braided Wire Rope Slings.

MACWHYTE

Manufacturers of Internally Lubricated Preformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal Stainless Steel Wire Rope, and Wire Rope Assemblies. Special catalogs are available.

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if you make ELECTRICAL equipment ...

you should know about SHARON SPECIAL STEELS



SHARONSTEEL

For more than 50 years Sharon has been a prime producer of the steels needed most by the electrical industry.

For such products as meters, outlet boxes, motors, controls, transformers, etc., Sharon produces hot and cold rolled special strip steels in large coils, cut lengths or sheets.

If you want exactly the right steel for the job, call in the man with experience in providing steel for the electrical industry — your Sharon Steel Salesman.

Typical products used by leading electrical manufacturers include:

STAINLESS — both straight chrome and chrome-nickel
ELECTRICAL STEELS — field, armature, electrical and motor grades
COATED STEELS — Galvanite*, Brite Zinc, Electro Galvanized, Terne
FORGING INGOTS and BILLETS
SPRING STEELS — of every analysis
SHARONART — the steel with the rolled-in surface design
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Electrical Manufacturers

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430 STAINLESS — a complete review of a popular straight chromium grade.

GALVANITE* — The story of one of the most popular hot dip zinc coated steels.

SHARONART* — Rolled-in design steels with excellent illustrations.

*Trademark registered by Sharon Steel Corporation

SHARON STEEL CORPORATION *Sharon, Pennsylvania*

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The IronAge

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ABP NBP

Editorial:

A-Bomb Blast or A-Bombast?

◆ THERE MAY BE REASONS why industrialists and others are confused about the whole A- and H-bomb situation. But information is available. And there is a problem—one which will be with us for a long time. Findings from the current Civil Defense test may help a lot.

There are some misconceptions that do our civil industrial defense plans no good. These are passed by word of mouth and are caused by lack of proper information. Here are a few major misunderstandings:

Why talk about A-bomb effects when we have H-bomb city busters? Chances are we and our enemies will standardize only various A-bomb weapons. Thus we will have to plan for large-scale A-bomb attacks. Also A-bomb protection plans will be useful in areas that would not be devasted by an H-bomb attack.

Why do anything if we are to be blown to smithereens? We aren't going to be blown to smithereens—that is all of us. Those who are not must help those who would be injured in an attack. Life has to keep moving. Civil and plant defense people who are not knocked out will have to carry on.

If we can evacuate people why build shelters? Evacuation will take place if and where possible. We cannot foretell where ground zero will be nor can the attacking plane. Shelters will be life savers at certain points from ground zero. They must be part of a dynamic program regardless of whether we have an H- or an A-bomb attack.

Is civilian defense a big political racket? There is a lot of cynical malarkey going the rounds that civilian defense setups are a haven for political hacks. It isn't so. Even if it were so it has no connection with defense problems and programs. Do politics in your organization—if you have them—keep the company from functioning? Civilian defense is now part of our life. It has to work.

This talk of an atomic attack is for the birds. It is probable that we will at some time in the future suffer an atomic attack in the United States. Even if we disagree violently with that statement we can't take the chance of leaving ourselves wide open with no proper or practical defense.

You, I and the other fellow fit into this picture. It is our responsibility to cooperate with CD people and to make our own plans for worker, family and plant protection. Not to do so is unthinkable.

Tom Campbell

EDITOR

Another **PRODUCTION SOLUTION**
by
MOTCH & MERRYWEATHER

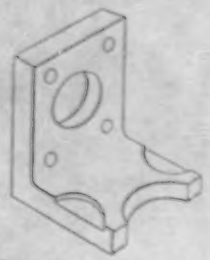
Does the Job Best!

A variety of machining operations, unique in sequence, is combined on a new 15-station automatic transfer machine. Grouping standard machine tool units attains maximum production and utilizes automation. In addition, the M. & M. Triple-Chip circular saw cut-off makes possible the use of low cost stock material; increases your ultimate savings. Start by sending us your part drawings for a production solution by Motch & Merryweather.

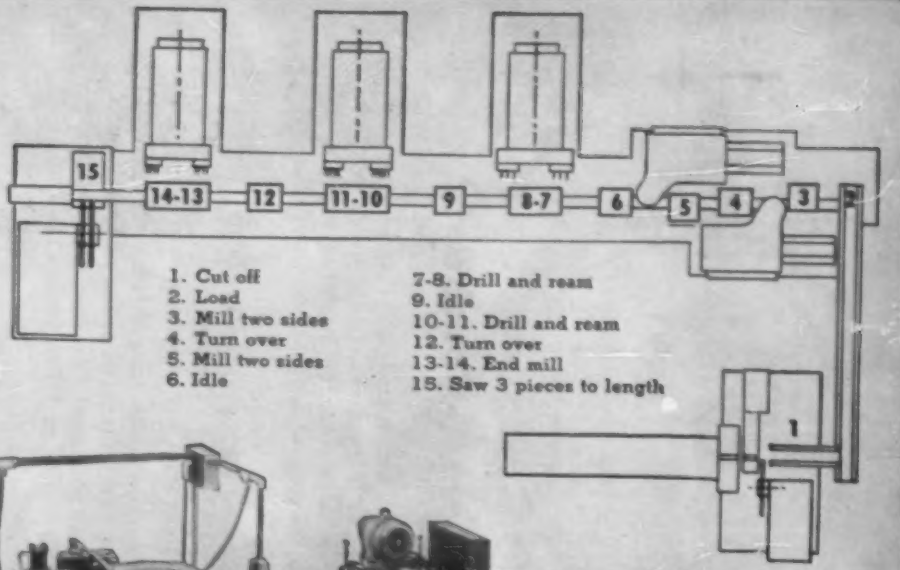
THE MOTCH & MERRYWEATHER MACHINERY CO.

MACHINERY MANUFACTURING DIVISION
CLEVELAND 13, OHIO

Builders of Circular Sawing Equipment, Production Milling, Automatic and Special Machines

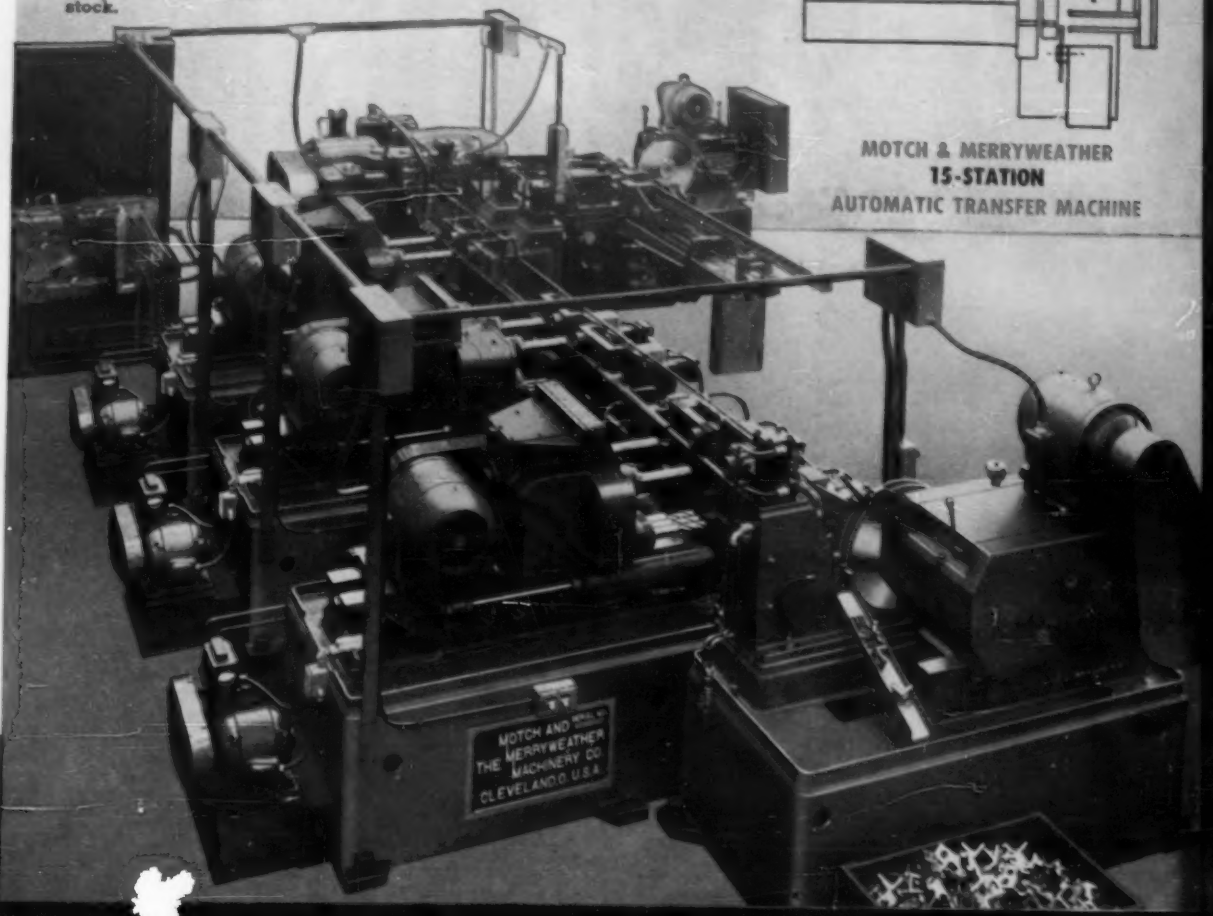


Part Name:
Cylinder bracket.
Production:
384 pieces per hour.
Material:
3" x 2½" x ½" angle iron, standard milled stock.



1. Cut off
2. Load
3. Mill two sides
4. Turn over
5. Mill two sides
6. Idle
7-8. Drill and ream
9. Idle
10-11. Drill and ream
12. Turn over
13-14. End mill
15. Saw 3 pieces to length

MOTCH & MERRYWEATHER
15-STATION
AUTOMATIC TRANSFER MACHINE



dear editor:

letters from readers

Metal Briquettes

Sir:

In reading your article in April 14, 1955 issue of THE IRON AGE concerning metal briquettes, we wish to take exception. You inaccurately list Pennsteel Corp. and Plainfield Iron & Metal Co. as the only two dealers who are turning out briquettes.

Our company has had a briquetter in operation long before Plainfield Iron & Metal Co. Shipping volume on briquettes has reached a point where we are now contemplating installation of a second press. *A. Hamelsky, Metals Briquetting Co., P. O. Box 727, New Brunswick, N. J.*

Metal Finishing

Sir:

The Materials Engineering Division is preparing a handbook on finishes for the use of arsenal design engineers. We would like permission to use some charts and the glossary from the Metal Cleaning and Finishing Handbook, THE IRON AGE, July 29, 1954. *A. L. Jamieson, Ordnance Corps, Frankford Arsenal, Philadelphia.*

We always give this permission to government agencies.—Ed.

Blast Cupola

Sir:

In your March 17, 1955 issue we noted in the "Newsfront" an item on a hot blast cupola. I wonder whether you have any detailed information on this operation. And also would it be possible to obtain the name of the company who is operating such a cupola? *F. J. McMulkin, Research & Development Engineer, Dominion Foundries and Steel Limited, Hamilton, Ontario.*

More details on the blast cupola may be obtained from The Iron Age, Apr. 21, p. 87 or from Central Iron & Steel Co., Harrisburg, Pa.—Ed.

Cold Welding

Sir:

We are interested in your "Newsfront" item on a new cold welding process which appeared in your April 14, 1955 issue of THE IRON AGE.

Additional particulars on the process and the number of the patent would be appreciated. *J. D. Shaw, S-K-C Research Associates, 445 Fifth Avenue, Paterson 4, N. J.*

Further information on the new cold welding process may be obtained from Phil Brotzman, Metallurgist, Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron 17, O.—Ed.

Air Conditioning

Sir:

A very interesting article entitled "Air Conditioned Rest Areas Boost Worker Productivity" by Dr. L. A. Brouha appeared in the August 19, 1954 issue of THE IRON AGE.

We would like to prepare copies of this article for general distribution and hereby request permission to do so. *R. C. Downing, Technical Assistant, E. I. Du Pont De Nemours & Co., Inc., Wilmington 98, Del.*

Air Gaging

Sir:

That's a mighty fine article on air gaging in your April 7, 1955 issue, page 129.

We would like to have your permission to reprint it, with full credit, of course, to THE IRON AGE, and distribute them to our sales organization. *Carl Linxweiler, Advertising Manager, The Sheffield Corporation, Dayton.*

Stuck for Ideas?



consider a ball



You're working on a new product. Or you're trying to improve an old one. You've tried one design after another, but none of them jell. Something's missing . . .

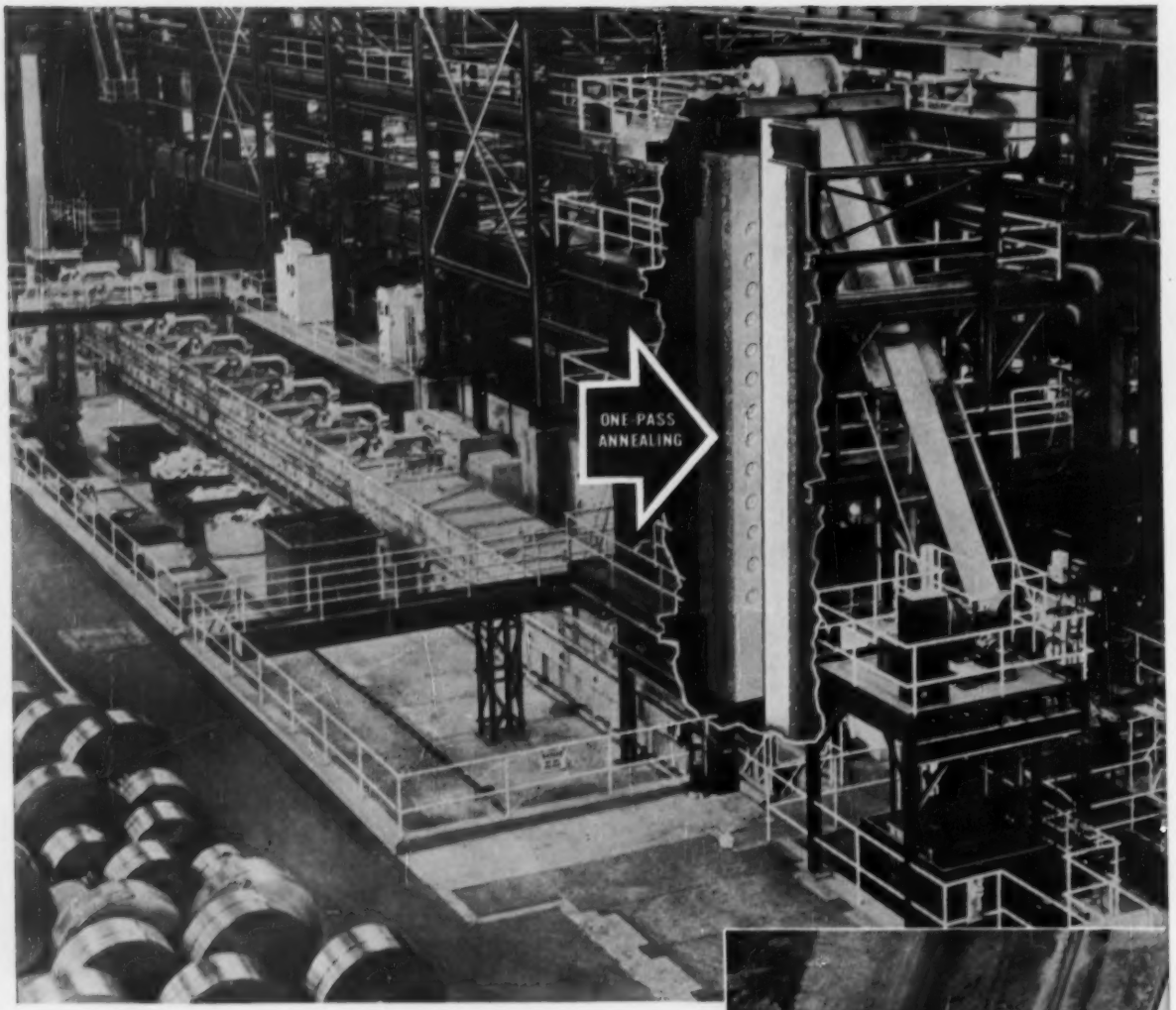
Is it a ball? A *Universal* ball?

Every day, designers and manufacturers are discovering *new uses* for balls *precisioneered* by Universal. Many of these new jobs are possible today only because of the infinite perfection that Universal puts into *every* ball it makes—whether it's pin-head small or golf-ball big. In chrome and stainless steel, this perfection means accuracy that is *better* than ten-millionths of an inch!

Yes, Universal Balls have what designers and manufacturers are looking for. They're *full* of ideas. May we tell you a few?

Universal Ball co.

WILLOW GROVE
MONTGOMERY CO., PA.





Galvannealed to Bend 180° Without Separation

THIS continuous bright annealing-galvanizing line uses SELAS GRADIATION strip annealing to obtain tight adherence of coating and high quality of product. Two new galvanizing lines scheduled for this year will also rely on Selas radiant-gas-burner heating . . . precisely applied . . . unsurpassed for uniformity across strip width.

- Compact, single-vertical-pass design saves valuable floor space . . . avoids rolls in heated section and accompanying maintenance and product quality difficulties.
- Elimination of externally-prepared atmosphere in heating section cuts operating costs.
- Precise thermal control assures reproducible uniformity regardless of gauge variations.

Selas heat processing is also used in low temperature preheat prior to galvanizing . . . delivering the strip bright and clean to the galvanizing bath.

Improved product quality, increased heating speed and lower costs are likewise achieved with GRADIATION strip heating in tin reflow and in annealing of both ferrous and nonferrous metals.

Write for descriptive literature on strip annealing.

SELAS

SELAS CORPORATION OF AMERICA
PHILADELPHIA 34, PA.

fatigue cracks

by William M. Coffey

Forced Sale

It goes without saying (*va sans, dear—Fr.*) that the pulling power of an advertisement in THE IRON AGE is phenomenal. But because part of our job is to *prove* this point we herewith, today, offer for sale a home in Connecticut at a special price that is restricted to the 164,000 readers of IA.

If any one of you is so fortunate as to be moved to this area we want you to know that the very finest place in Connecticut is a town called Stamford. The schools are new, modern and uncrowded, the teachers very pretty. Taxes are low, the water delicious. Commutation to New York is cheap and fast—only pennies and 45 minutes.

The very best house and land available in Stamford belongs to us. This is the house that is for sale because we are moving to Philadelphia. Bids are open.

You have dreamed of a place like this. Truly, it is not a house. It is a *home*. It has been lived in. Nay, it is a *plan*. It is a plan for *better living*, charming and gracious. Situated on a beautiful, flowering acre atop the highest, most charming and gracious ridge in Stamford it not only offers the envied isolation of countrified living on a deadend surrounded by ye ole New England stone walls and trees but also affords a delightful, albeit microscopic, rooftop-telescopic view of beautiful Long Island Sound (in the winter time). One of the unique features of this plan for better living is the existence in one corner of the acre of a small, charming and gracious stone-walled burial plot now deserted, but available at any time for the use of the owner.

The house itself cannot be adequately described. To say that it is a true, one-floor ranch type, barn red, with a 23 ft picture window stretching from floor to ceiling, with a peaked, beamed living room, charming and gracious . . . to say that it has radiant heat, that the heating bill is only $140 a year, that charming and gracious living outdoors is available on a flagstone surrounded by dog woods . . . to say that there is a charming and gracious oversize two-car garage w/tool house attached, that there is a *rec rm unf* (a recreation room, play room or den unfinished) and three charming and gracious bedrooms is like describing the White House as a white house, 20 rooms w/bath.

You must see this charming and gracious plan for better living to appreciate it. A line dropped to us at Fatigue Cracks will bring further details. Please, principals only. And we aren't kidding, too, either.

Puzzlers

The answer to the Apr. 7 puzzler is 400. The winners: Mel Tudor, Dictograph Products; I. M. Darcy, Charisie, Dale Letterman and Orville of General Steel Castings Corp.; Donald F. Stoneburner, C. L. Langenberg, H. C. Husser; Jim Mull and Marilyn, The North American Manufacturing Co.; F. E. Fitzgibbon, Keen Manufacturing Corp.; Gordon Stephenson; Mildred Chapman who also solved the big number and carpet puzzlers. L. D. Deere, The Dow Chemical Co.; Mr. J. G. Campbell; C. E. Rick; R. W. Shank (we're doing what you asked, Mr. Shank), International Harvester; William Greene, American Steel & Wire Co.; J. S. Profogle, Belden Manufacturing Co.; Richard A. Patterson; Austin H. Phelps; ole Joe Brugman; ole Abe Raich, Colorado Fuel & Iron; L. T. Jensen, Torit Manufacturing Co.; Robert E. Cates; and Henry Styskal of the Philco Co. This is also sort of a test. We'll try to explain next week.

HERE'S NEWS FOR IRON FOUNDRYMEN!

7 big improvements made available to industry by HANNA, best known name in iron . . .

HANNATEN

THE IRON INGOT WITH THE NEW SHAPE

FOR USERS OF 10-LB. PIGS



6½" x 5¾" x 1⅜"

- NO FREE-CARBON POCKETS
- FINER GRAIN STRUCTURE
- MORE EVEN MELTING
- MORE ACCURATE CONTROL
- EASIER CHARGING BY COUNT
- LESS BREAKAGE
- EASIER HANDLING

Available in all grades and extra-close-grain HannaTite. (Standard 38-lb. pigs also available.)

THE HANNA FURNACE CORPORATION

Buffalo • Detroit • New York • Philadelphia

Merchant Pig Iron Division of

NATIONAL STEEL CORPORATION



This one SPEED NUT for either screw provides new savings!

If you use "A" and "Z" sheet metal screws in your product assemblies, here's good news for everyone from your design and production engineers to stock room clerks.

C7000 Flat Type SPEED NUTS work equally well on both "A" and "Z" sheet metal screws—only one type of SPEED NUT brand fastener to purchase, stock and handle. You reduce inventories, eliminate parts mixing. And you can also lower unit costs through larger quantity purchases.

One SPEED NUT replaces three parts . . . lock washer, threaded nut and spanner washer. Yet it offers an attachment that is permanently tight until you want to loosen it!

Ask your Tinnerman representative for samples of the new dual-service C7000 Flat Type SPEED NUT . . . it's the modern way to save time and money, and avoid headaches!

TINNERMAN PRODUCTS, INC. • BOX 6688, DEPT. 12, CLEVELAND 1, OHIO

Canada: Dominion Fasteners, Limited, Hamilton, Ontario. *Great Britain:* Simmonds Aerocessories, Limited, Treforest, Wales. *France:* Aerocessoires Simmonds, S. A., 7 rue Henri Barbusse, Levallois (Seine). *Germany:* Hans Sickinger GmbH "MECANO", Lemgo-i-Lippe.

TINNERMAN Speed Nuts®
FASTEST THING IN FASTENINGS®

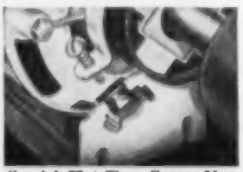
TYPICAL USES



Flat Type SPEED NUTS cut costs of attaching auto radio speaker to baffle.



Air-conditioner control-panel assembly costs cut 40% with help of Flat Type SPEED NUTS.



Special Flat Type SPEED NUT reduced assembly time 87% on washer motor mount bracket.



dates to remember

MAY

NATIONAL ASSN. OF CORROSION ENGINEERS—Regional Conference, May 9-11, Hotel Statler, New York. Association headquarters are at 1 Main St., Houston 2, Texas.

STEEL BOILER INSTITUTE, INC.—Annual meeting, May 9-10, The Shamrock, Houston. Institute headquarters are at 1308 Land Title Bldg., Philadelphia.

METAL TREATING INSTITUTE—Spring meeting, May 9-11, Ambassador Hotel, Los Angeles. Institute headquarters are at 271 North Ave., New Rochelle, N. Y.

EXPOSITIONS

NATIONAL MATERIALS HANDLING EXPOSITION — May 16-20, International Amphitheatre, Chicago. Management: Clapp & Poliak, Inc., 341 Madison Ave., New York.

NATIONAL ASSN. OF PURCHASING AGENTS—Annual convention and inform-A-Show, May 29-June 1, Waldorf-Astoria Hotel, New York. Association headquarters are at 11 Park Place, New York.

BASIC MATERIALS EXPOSITION — May 31-June 3, Convention Hall, Philadelphia. Show management: Clapp & Poliak, Inc., 341 Madison Ave., New York.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS — Biennial heating conference, May 10-11, La Salle Hotel, Chicago. Institute headquarters are at 33 W. 39th St., New York.

METAL POWDER ASSN.—Annual meeting, May 10-12, Bellevue-Stratford Hotel, Philadelphia. Association headquarters are at 420 Lexington Ave., N.Y.

NATIONAL ASSN. OF SHEET METAL DISTRIBUTORS—Spring meeting, May 12-13, Cleveland Hotel, Cleveland. Association headquarters are at 1900 Arch Street, Philadelphia.

AMERICAN INSTITUTE OF INDUSTRIAL ENGINEERS, INC. — Annual conference and convention, May 12-14, Kingsway Hotel, St. Louis.

SOCIETY FOR APPLIED SPECTROSCOPY—Annual meeting, May 12-13, Hotel New Yorker, New York.

NATIONAL FEDERATION OF INDEPENDENT SCRAP YARD DEALERS, INC. — Open Forum and Dinner, May 15, Hotel Waldorf-Astoria, New York. Federation headquarters are at 29 Broadway, New York.

INDUSTRIAL HEATING EQUIPMENT ASSN., INC.—Spring meeting, May 15-18, The Homestead, Hot Springs, Va. Association headquarters are at 412 Fifth St., N. W. Washington, D. C.

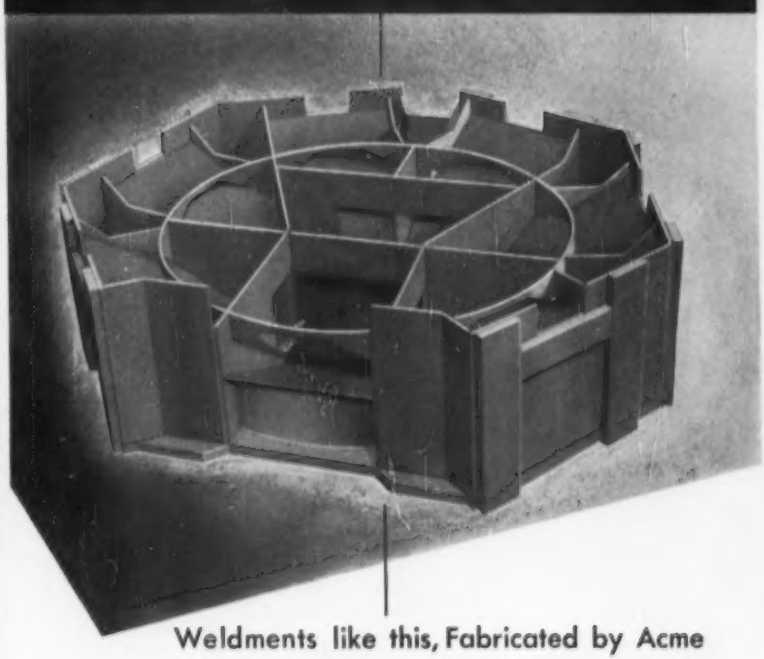
PORCELAIN ENAMEL INSTITUTE — Mid-year Division conference, May 18-20, Edgewater Beach Hotel, Chicago. Institute headquarters are at DuPont Circle Bldg., 1346 Connecticut Ave., N. W. Washington, D. C.

AMERICAN MANAGEMENT ASSN. — Conference, May 23-25, Hotel Roosevelt, New York City. Association headquarters are at 330 W. 42nd St., New York.

MACHINERY DEALERS NATIONAL ASSN.—Convention, May 23-25, Netherland Plaza Hotel, Cincinnati. Association headquarters are at 1346 Connecticut Ave., N. W. Washington, D. C.

AMERICAN IRON AND STEEL INSTITUTE—General meeting, May 25-26. Institute headquarters are at 350 Fifth Ave., New York.

ANOTHER MACHINE TOOL BASE THAT "couldn't be welded"



Weldments like this, Fabricated by Acme excel in Strength, Rigidity, and Precision Finish . . . save Weight and Cut Costs. No Design is too complicated . . . not even Yours!

In Doubt? Ask for Bulletin B-3
"The Facts about Weldments and Castings"



ACME WELDING

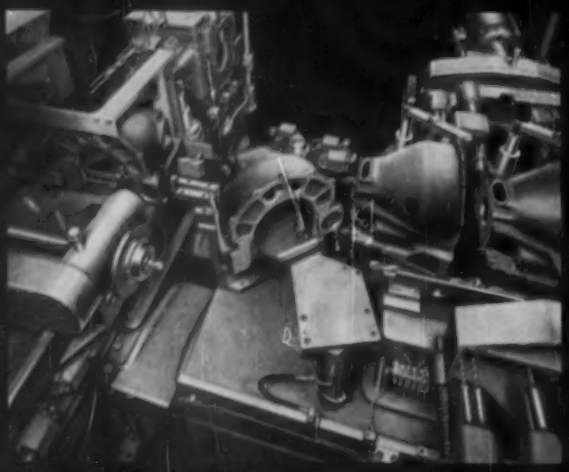
DIVISION OF THE UNITED TOOL & DIE CO.

1044 NEW BRITAIN AVE., W. HARTFORD, CONN.

A. S. M. E. U68-U69 Qualified Welders • A. P. I. - A. S. M. E. Approved
Underwriters Label & Inspection Service • X-Ray Facilities • Navy Approved
National Board Approved • Hartford Steam Boiler Inspection Service

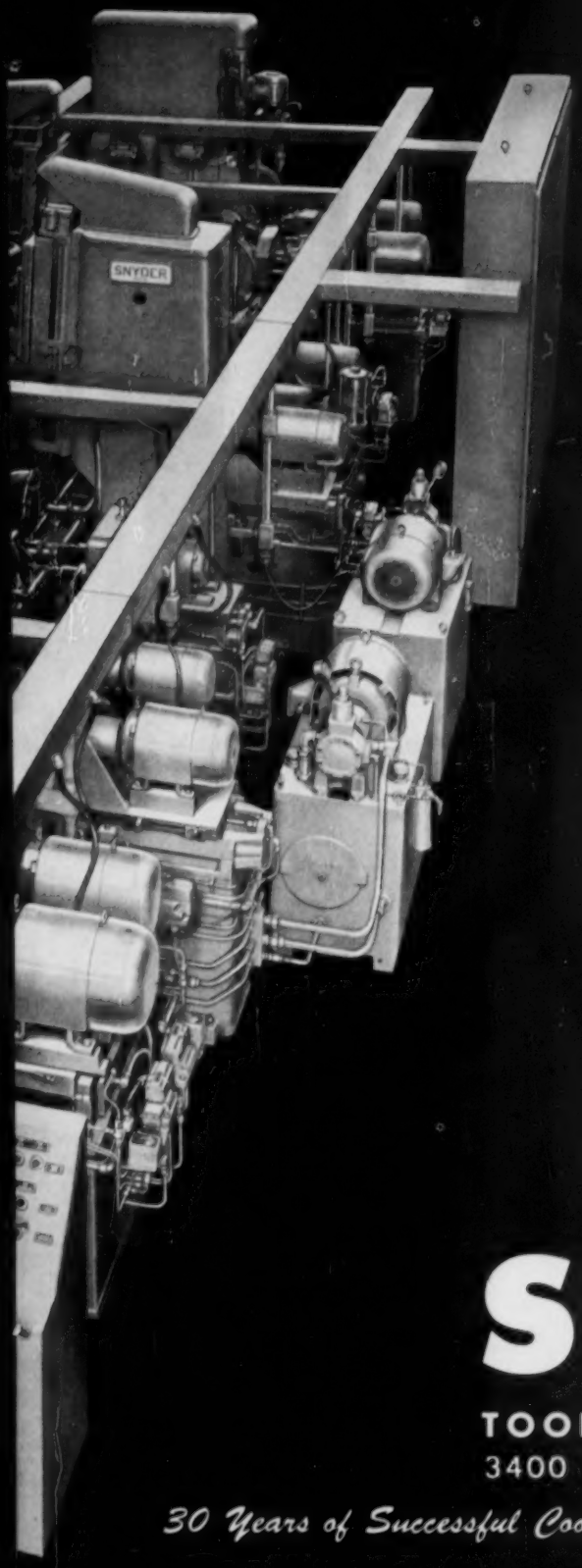
STEEL STAINLESS STEEL EVERDUR ALLOYS

SNYDER – AUTOMATION



At Station 16, work piece is turned 90° and transferred to other rails without vibration or loss of precision locating.

LEADER FOR 30 YEARS



Presents

SNYDER SPECIAL

22-STATION automatic transfer machine for processing cast iron clutch housings; which drills, rough and finish bores, mills, saws, taps, spot-faces, counterbores and chamfers, performing a total of 110 operations on various surfaces or holes of various dimensions. Production, 124 cycles an hour at 80% efficiency.

UNUSUAL FEATURES: At Station 1, a 2" breather hole is trepanned from solid metal and finish bored with one tool. At Stations 8 and 9, a section of transfer rails cam-linked to milling units, drops to bring work piece into line with cutters. At Station 16, work piece is turned 90° and transferred to other rails without vibration or loss of precision locating.

SNYDER

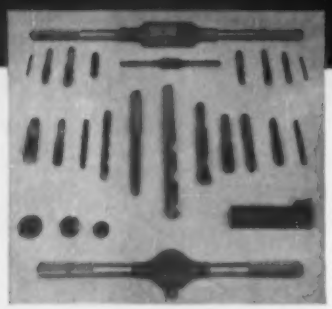
TOOL & ENGINEERING COMPANY

3400 E. LAFAYETTE, DETROIT 7, MICHIGAN

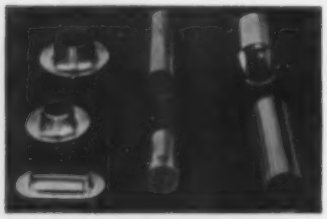
30 Years of Successful Cooperation with Leading American Industries



Loads are easily handled in the Steam Homo Furnace.



STEAM ATMOSPHERE HEAT TREATMENT *is becoming standard for many high speed steel cutting tools. It's effective for tools machining average jobs . . . is even better for treating tools handling tough jobs, such as working high-chrome, high-carbon steels.*



COST CUTS OF 53% *. . . in annealing and pickling, effected through steam-atmosphere annealing of these brass stampings.*



For full information about Steam Homo tempering, send for the NEW 12 page catalog, "L&N Steam Homo Method for Heat-Treating". Write our nearest office, or 4956 Stenton Ave., Phila. 44, Pa.

Want Heat Treating Versatility?

CHECK THESE STEAM HOMO® USES

- Scale-free tempering and annealing of steel, brass and aluminum parts, thus reducing . . . sometimes eliminating . . . subsequent cleaning.
- Improving compressive strength and hardness of powdered iron parts.
- Giving a uniform blue-black finish to steel and powdered iron parts.
- Curing and aging molded rubber and beryllium copper parts.
- Replacing a chemical lubricating treatment to cast iron parts.
- Improving corrosion resistance of steel and iron parts.

And in every case you get:

- A compactness which makes the Steam Homo equipment ideal for installation directly in production lines.
- A steam atmosphere heat-treating process which is entirely safe and easy to follow.

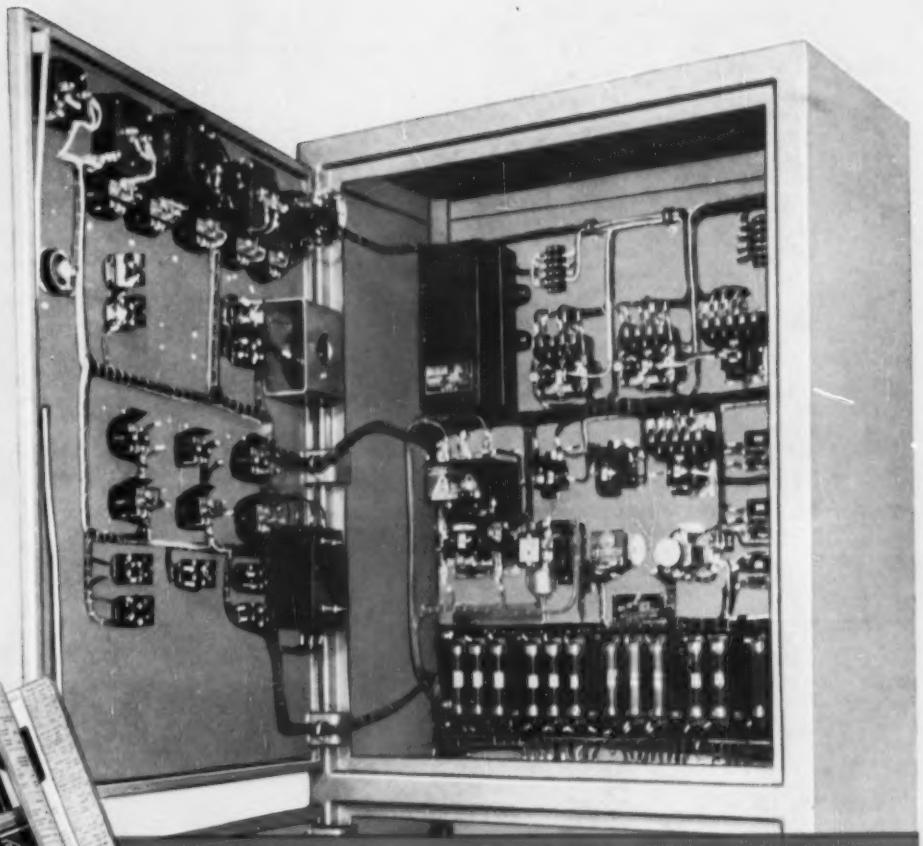
Standard Steam Homo furnaces are made in a variety of sizes . . . from those with work spaces as small as 11½″ x 15″ to those as large as 28″ x 60″. All are supplied as assembled units, ready for installation.

LEEDS [LN] **NORTHRUP**

instruments *automatic controls* • *furnaces*

The Sign of
QUALITY
MOTOR CONTROL

Control panel for BETA dust precipitator rectifier, shown below with door closed. It has 3 Bulletin 709 starters, 2 Bulletin 700 relays, Bulletin 702 contactor, and Bulletin 809 overload relay. On door are 20 Bulletin 800T oiltight push buttons and pilot lights.





MANUAL and AUTOMATIC COMPONENTS for *Trouble Free* Control Panels

Automatic control panels must be reliable . . . not just MOST OF THE TIME but ALL OF THE TIME. The failure of only one component . . . JUST ONCE . . . may be costly in spoilage and production delay.

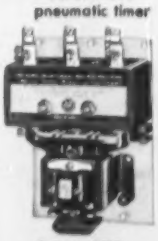
A-B controls continue in first place in dependable switching because they are so simple. They have no troublemaking pivots, pins, or bearings to gum up and stick. Their double break, silver alloy contacts never require maintenance until all contact material has been worn away.

Specify Allen-Bradley controls for your machines. Send for the A-B Handy Catalog.

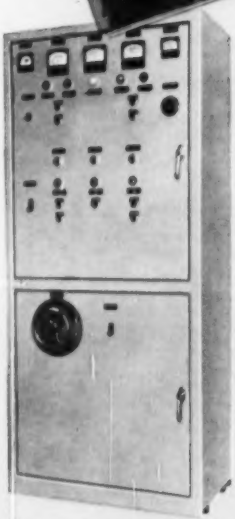
Allen-Bradley Co., 1316 S. Second St.
Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Ltd.
Galt, Ont.



Bulletin 849
pneumatic timer



Bulletin 702
Size 2 contactor



BETA dust precipitator control cabinet with A-B oiltight push buttons



Bulletin 700
universal relay

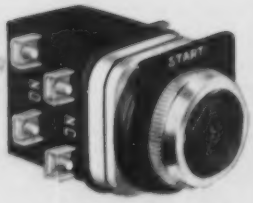


Bulletin 609
manual starter

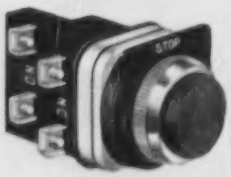


Bulletin 709
solenoid starter

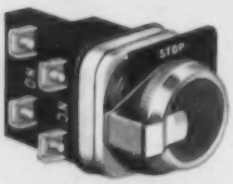
ALLEN-BRADLEY
MOTOR CONTROL
QUALITY



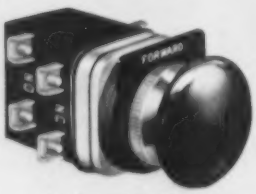
Start button



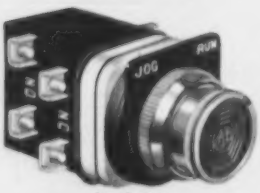
Stop button



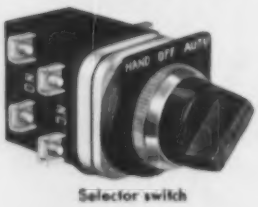
Stop button with locking attachment



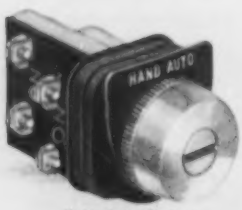
Mushroom head button



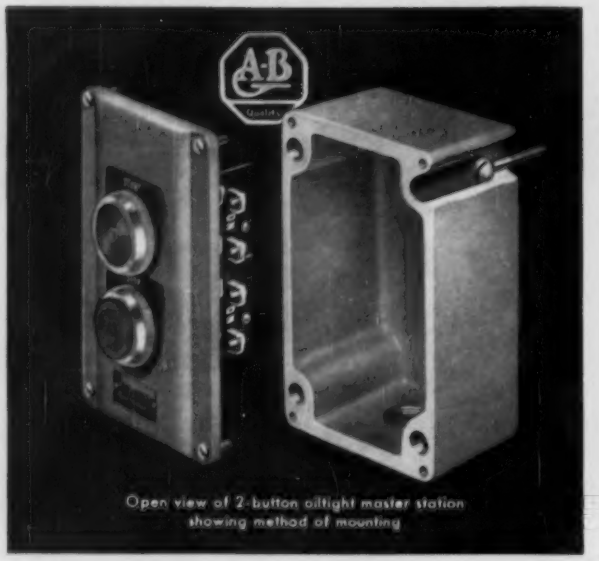
Jog button



Selector switch



Coin slot selector



Open view of 2-button oiltight master station showing method of mounting



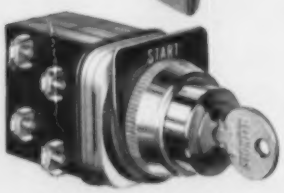
Pendent type oiltight push button stations available with 2 to 10 buttons & pilot lights.

ALLEN-BRADLEY OILTIGHT PUSH BUTTON LINE

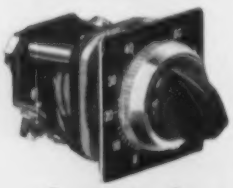
that *Satisfies Every Requirement*



Jog button with Start button and Stop & Jog lever



Cylinder lock button



Potentiometer unit



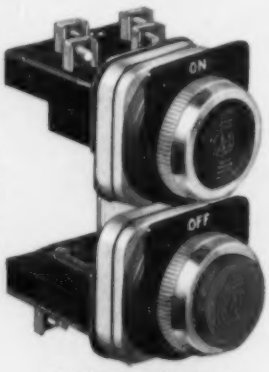
Pilot light Transformer type

Here are a few Allen-Bradley oiltight push button units for machine tools that can be used in endless combinations. All have a flexible, oiltight diaphragm between button and contact block to exclude oil or cutting fluids from contacts. The silver contacts are maintenance free.

Contact blocks may be assembled interchangeably with any type of button. They are available with 1 NO-NC; 2 NO-NC; 4 NO-NC; 2 NO; or 2 NC contacts. Pilot lights of matching design are standard items. See the A-B Handy Catalog for details.

Allen-Bradley Co., 1316 S. Second St.
Milwaukee 4, Wis.

In Canada—
Allen-Bradley Canada Ltd.
Galt, Ont.



Two-button maintained contact button

5-55-RM

A-B Quality

ALLEN-BRADLEY QUALITY

BULLETIN 800T PUSH BUTTONS



Heat treating gives LIMAS greater strength and longer service life

In the 1500 degree F. circle, formed by this battery of gas burners, is a shipper shaft pinion destined to become a vital part of a LIMA shovel. This heat, the succeeding water quench and controlled tempering process, establishes a uniform hardness up to two inches in depth to the teeth and teeth base of the pinion. This means longer serviceable life to this important part.

Flame and induction hardening are used on rollers, gears and shafts of every LIMA machine. Heat treating, used with our know-how, is one of the reasons why LIMA is known throughout the world for quality—cost-conscious equipment men everywhere are saying, "you can depend on a LIMA for low maintenance and less down-time."

COMPARE QUALITY! No other machine gives you as much as LIMA!

1. Piston ring type dirt seal rings and retainers in crawler rollers.
2. Moving parts are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation.
4. Anti-friction bearings at every vital bearing point.
5. Big capacity drums and sheaves are easy on cables.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath.
7. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

The above advantages contribute to LIMA'S greater output, less down-time and lower maintenance.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

LIMA Type 34 crane with wheel mounting.



DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

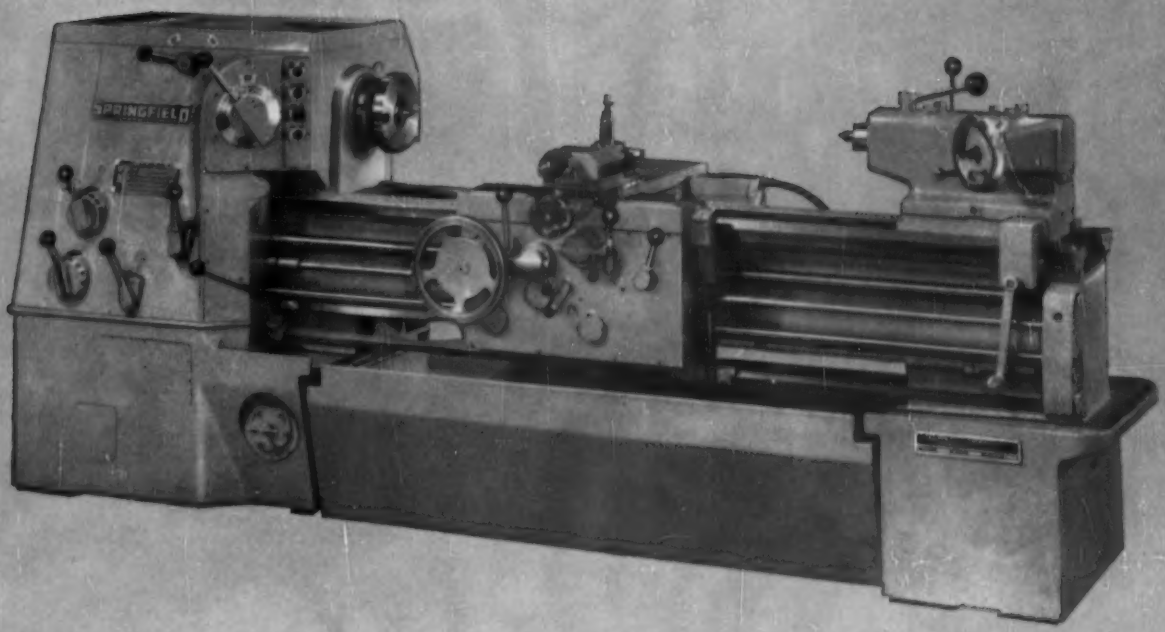
LIMA SHOVELS · CRANES · DRAGLINES · PULLSHOVELS

BALDWIN-LIMA-HAMILTON

Construction Equipment Division · LIMA · OHIO · U. S. A.

SPRINGFIELD

See Springfield at Booth 612, Machine Tool Show, Chicago, Sept. 6-17.



more useful horsepower

All the horsepower in a Springfield Model "S" Lathe is productive.
A simple, straight-forward gear train, plus double-action lubrication, plus tight dynamic balance tolerances (.0005" displacement) eliminate friction and vibration, the twin horsepower thieves.
In the headstock, only the gears necessary to a given speed are engaged. Other gears run free with a stabilizing flywheel action, no drag on power.
A high pressure filtered oil mist keeps all gears and bearings drenched, and a cascade of oil lubricates the feed box.

Lathes: Engine and tool room, contouring and reproducing—swings 14" to 32".
Vertical Universal Grinders: swings 18" to 42".

The Springfield Machine Tool Company
Springfield, Ohio
65TH YEAR OF BUILDING IDEAS INTO MACHINE TOOLS

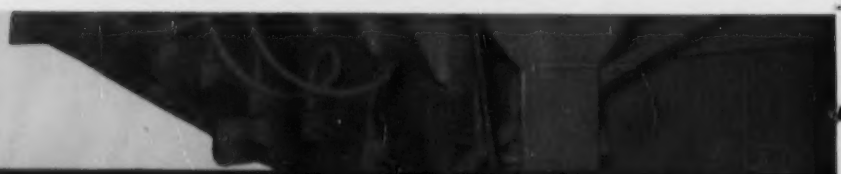
SPRINGFIELD

Jumbo die



• Short, special purpose, removable upper brackets.

• Large area, removable upper brackets.



CINCINNATI

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

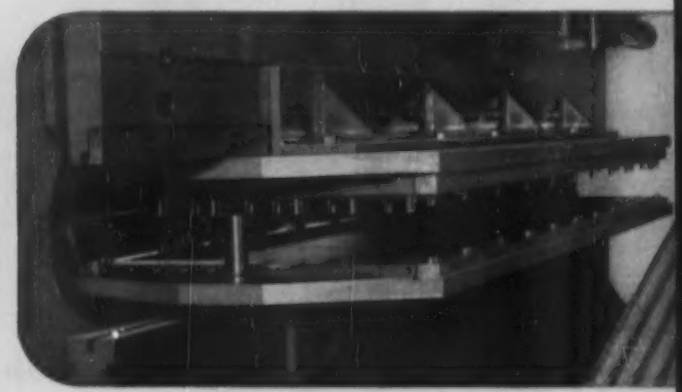
areas . . .

on Cincinnati Press Brakes



More and more jobs are being done on versatile Cincinnati Press Brakes. Removable or fixed brackets with large die areas permit many jobs to be done both in the Press Brake and Press fields. When dual purpose performance is required removable brackets are used—for Press work only, fixed brackets are furnished. Brackets are designed to sizes desired.

• Large area, permanent wide bed and ram for press work.



• Large area, removable upper and lower brackets.

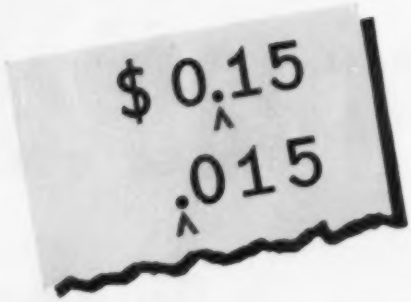


Investigate! **Our Engineering Department will be glad to advise you on the profit and production possibilities in your shop. Write for Catalog B-4.**



IS POINT BLUNT?

P-K Type A Sheet Metal Screws have sharp gimlet points. Start easy, drive straight, even when holes in two sheets are misaligned.



the **POINT** makes the difference

A properly planned saving of 15 cents per unit can fade to 1½ cents — or nothing — on the assembly line . . . unless the screws you use have the good points that assure quick starting and straight driving.

Bad points are hard to detect in the package, but your cost sheets and customer complaints will soon show their effects — job slowdown, parts spoilage, hidden weakness.

That's why P-K quality standards have been set so high — to make sure you get P-K Self-tapping Screws that are not only *pointed for savings*, but headed, threaded, and heat-treated with one purpose, to keep your assembly lines trouble-free.

Start making *planned* assembly savings pay off . . . talk to a P-K Assembly Engineer. Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.



DOUBLE LEAD THREADS?

P-K Type Z Self-tapping Screws have well defined taper. Screw stands erect in hole and double lead thread means quick, easy starting; forms secure mating threads.

PARKER-KALON®



IN STOCK . . . see your nearby P-K Distributor . . .



HOW MANY FLUTES?

♦ P-K Type F Screws have five thread cutting flutes; easier to start, less torque to drive, cut clean threads all the way in.

in assembly savings per unit

P-K STANDARDS
make sure you get
SCREWS POINTED FOR SAVINGS

P-K design and quality standards protect you against the bad points shown and many others that will slow down assembly and cause parts damage. They don't "get by" P-K Inspectors — that's why *all* P-K Self-tapping Screws can be "Guaranteed First Quality."



IS PILOT TOO SHORT?

♦ Pilots of P-K Type U Drive Screws are proper size and length to permit screws to start straight, drive straight.

The First originated by P-K . . . and First today . . . the leading choice for fastening economy

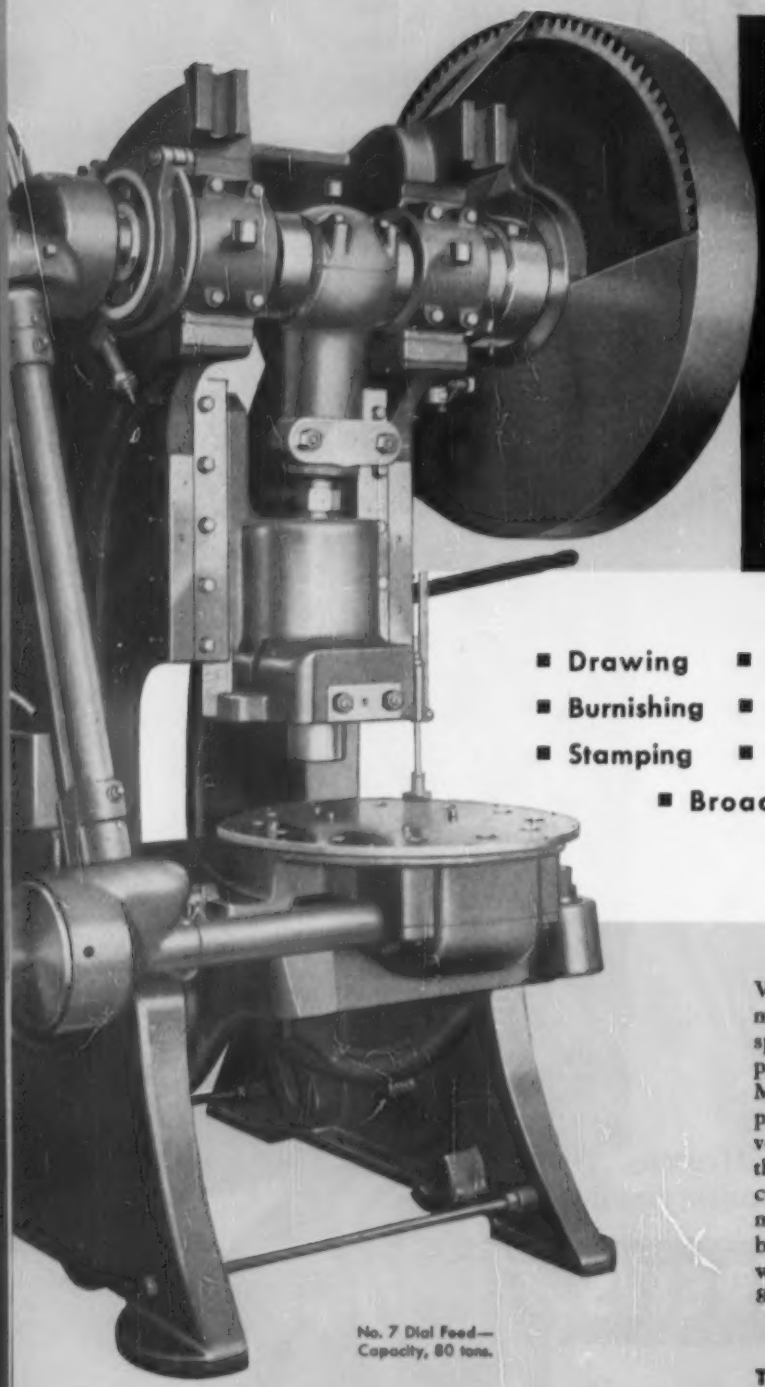
SELF-TAPPING SCREWS





your local Supply and Service Specialist

Look at the operations they perform!



No. 7 Dial Feed—
Capacity, 80 tons.

MODERN FEDERAL DIAL FEEDS

- Drawing
- Piercing
- Forming
- Staking
- Burnishing
- Assembling
- High Speed Marking
- Stamping
- Punching
- Crimping
- Wiring
- Broaching
- Riveting
- Burring

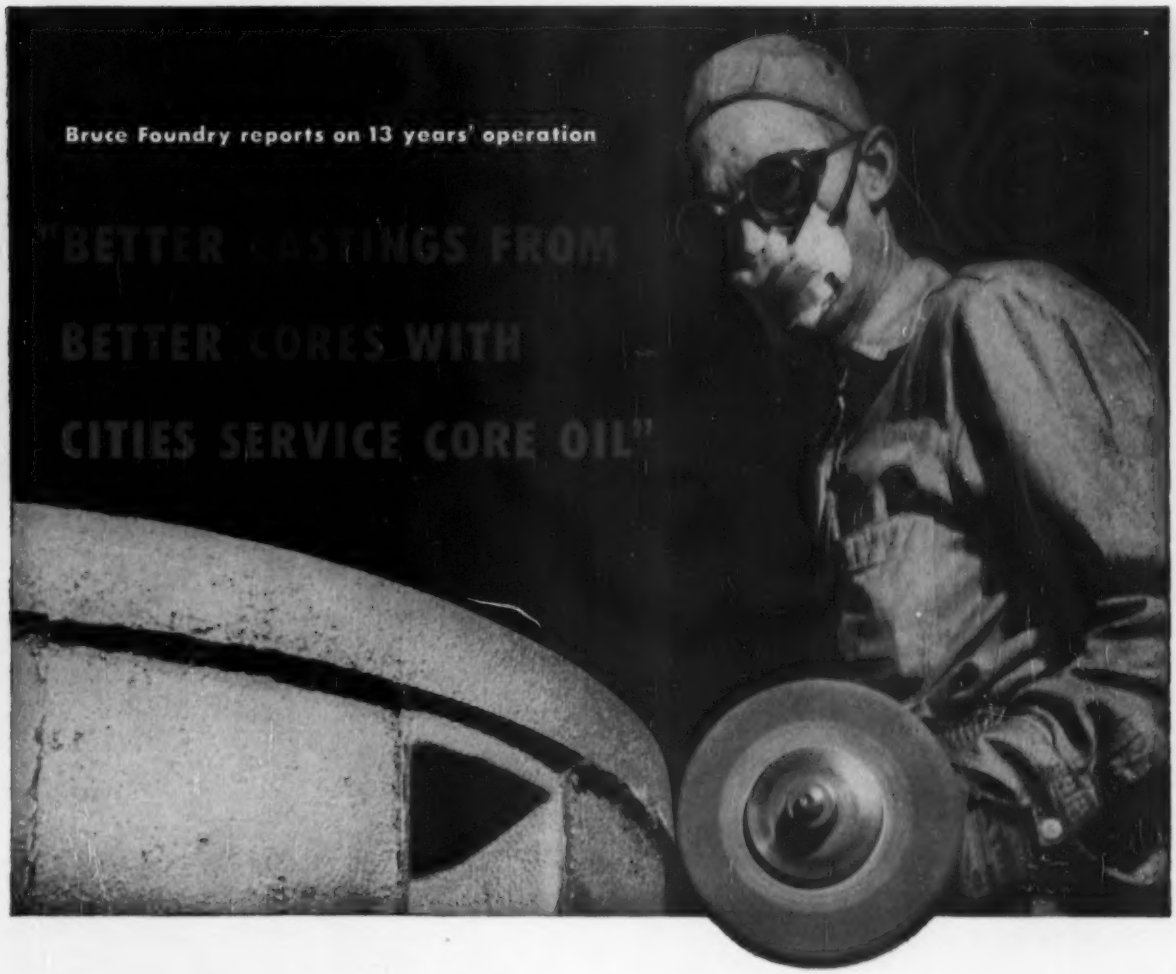
Versatile? Yes! And with the right tools these modern presses will also perform many of the specialized operations that are unique to your particular plant. Automation is today's watchword! Modernize now with Federals and watch your production go up, and costs go down. Surveys reveal many a Federal Dial Feed doing 3 to 5 times the work of a standard press—reducing accidents, cutting down-time, eliminating expensive equipment of limited use. These rugged, precision-built presses incorporate the finest materials and workmanship. Available in eight sizes, from 6 to 80 tons. Automatic feeds and ejectors, if desired.

Write for new Dial Feed catalog.

THE FEDERAL PRESS COMPANY
502 Division Street, Elkhart, Indiana

FEDERAL DIAL FEED PRESSES

30 Years of Quality Construction





PRESIDENT WILLIAM J. BRUCE is high in praise for Cities Service Core Oil. Says it prevents premature collapsing, eliminates sticking, permits minimum smoke and offers absolute uniformity. Great in every respect.

Located in Tecumseh, Michigan, Bruce Foundry and Mfg. Co. has a melting capacity of 30 to 40 tons per day. For many years Bruce has turned out top-notch castings for refrigeration and automotive hydraulic equipment.

And for thirteen of those years, Cities Service Core Oil has been a major factor in the quality and rapidity of Bruce's work. Probably no one is better qualified to comment on this oil than President William J. Bruce. Here's what he says: "One of the biggest reasons I can think of for recommending Cities Service Core Oil is its absolute uniformity. This we have discovered in every single order for 13 years. As for foundry performance, I don't think there's a better oil. It has high hot strength preventing premature collapsing, yet collapses rapidly at the right time so that sand doesn't have to be dug out of castings. In addition, it eliminates sticking and permits minimum smoke."

If you'd like to learn more about the oil Mr. Bruce praises so highly, talk to a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



AFTER REMOVAL FROM CORE BOX, sand core gets attention from skilled technician at Bruce Foundry. Firm makes castings for automotive and refrigeration hydraulic equipment, has used Cities Service Core Oil for 13 years.


BAY STATE
MADE IN U.S.A. BY
BAY STATE ABRASIVE PRODUCTS CO.
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USE A
SAFETY GUARD
SEE AMERICAN
SAFETY CODE
TESTED FOR USE
NOT TO EXCEED
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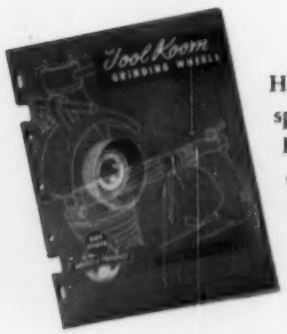
Top Tool Conditioning

WITH BAY STATE WHEELS!

Quality cutting tools boost production and cut costs *only* if they are kept in quality condition! For single point tools or complicated cutters . . . steel or carbide . . . there is a BAY STATE wheel to keep quality high and cutting performance at peak efficiency.

Ask your BAY STATE distributor about tool grinding "Wheels of Progress" that keep pace with the rapid progress of modern tools.

SEND FOR LATEST LITERATURE WITH PROVEN SPECIFICATIONS



Here are top tool-conditioning specifications in "Wheels of Progress" . . . well over 150 of them . . each thoroughly proven by industrial use. Send for your copy now.

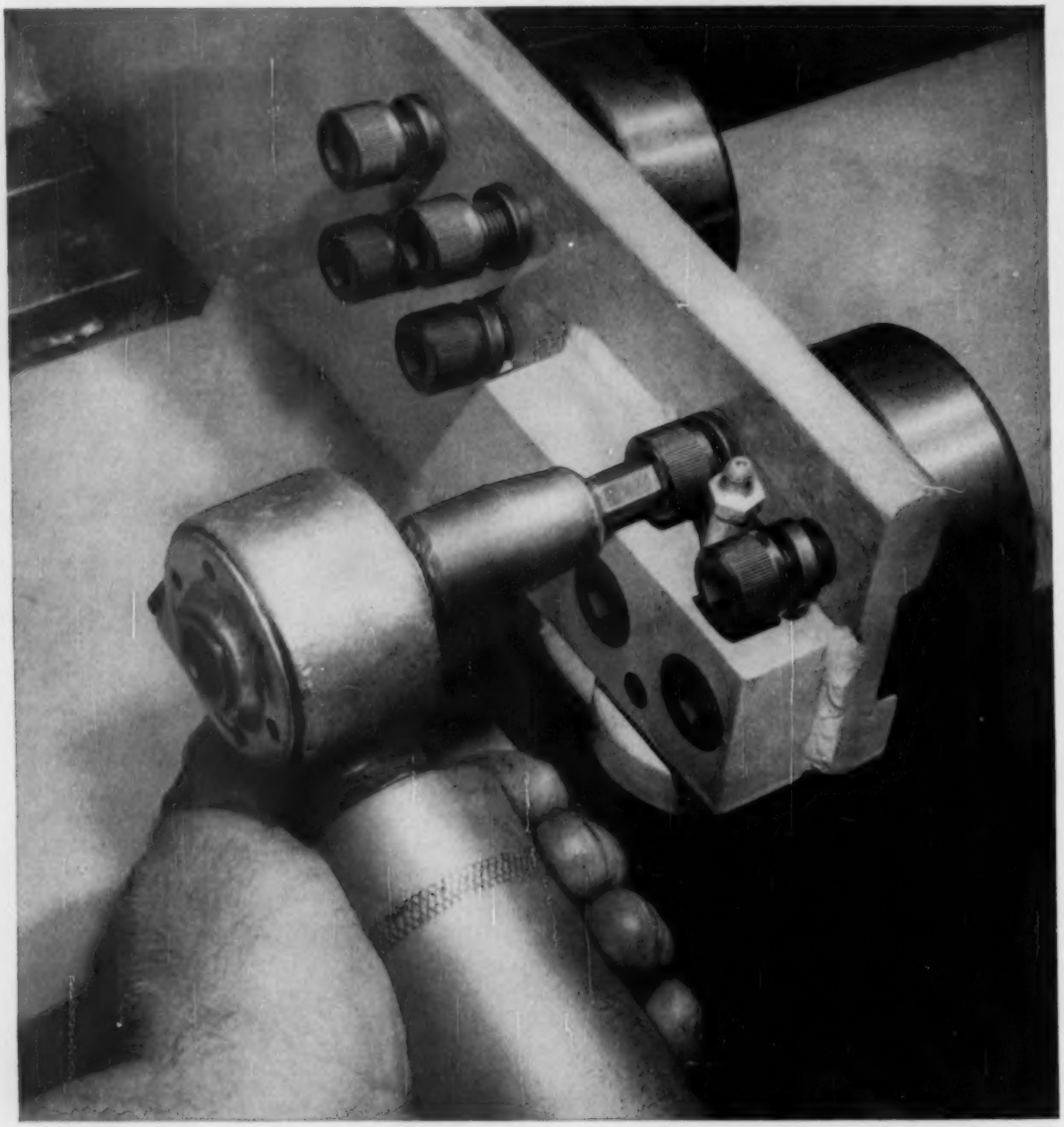
These specifications and BAY STATE's "On-The-Job" engineering service are an ideal combination for your progress in Tool Room grinding.

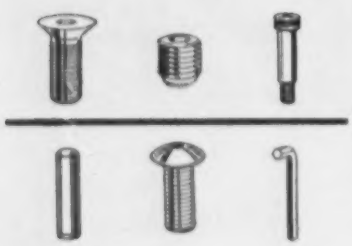
BAY STATE ®
WHEELS of PROGRESS

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Massachusetts, U. S. A.

Branch Offices and Warehouses—Bristol, Conn.; Chicago, Ill.; Cleveland, Ohio; Detroit, Mich.; Pittsburgh, Pa.
Distributors — All principal cities
In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ont.

UNBRAKO AT WORK



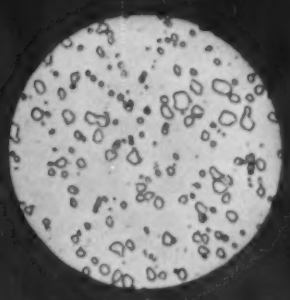


UNBRAKO SOCKET HEAD CAP SCREWS provide additional safety and increased efficiency on industrial lift trucks. Sixteen of them are used to fasten the side thrust fork carriage rollers which reduce the stresses caused by off-center loading. These standard UNBRAKOs have heads forged for strength, and sockets of uniform depth and size for strength and maximum torque in wrenching. Fillets and threads are formed to provide continuous grain flow throughout the screw. For the UNBRAKO story, see your authorized industrial distributor. Or write STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

UNBRAKO SOCKET SCREW DIVISION SPS JENKINTOWN, PENNSYLVANIA

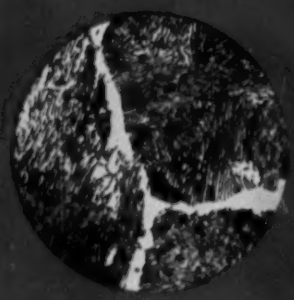


consistent uniformity!



SPHEROIDIZED . . .

for easier cold forming



PEARLITIC . . .

for easier blanking procedure



WEIRTON

high carbon strip cold-rolled spring steel









Manufacturers throughout the nation find Weirton cold-rolled spring steel consistently produces best results in a wide variety of products.

Weirton supplies spheroidized-annealed cold-rolled spring steel for operations where superior forming qualities are necessary. Simple and economical fabrication is assured by the exceptional ductility of the controlled grain structure.

Where clean, economical blanking is the major requirement, Weirton supplies pearlitic steel structure that is temper-rolled in controlled hardness and tensile strength.

Both structures are available for specific heat treating and hardness. And in both structures, Weirton high carbon cold-rolled spring steel possesses five highly important characteristics: 1. Uniform chemical and physical properties. 2. Exact consistency of grain structure. 3. Accurate response to heat treatment. 4. Exceptional uniformity of gauge and width. 5. Controlled decarburization limits. . . . Why not let Weirton help make your product better?



WEIRTON STEEL COMPANY

Weirton, West Virginia

NATIONAL STEEL CORPORATION



does MORE work... MORE easily

new POWER FEED HEAD

U. S. Vertical Miller



Write for descriptive folder

Here's the new U. S. Vertical Miller with Power Feed Head – the head into which U. S. has built all the most wanted features without sacrificing traditional U. S. simplicity. Check its infinitely variable feed rate, its 800 pounds of down thrust on the quill, its supplemental hand feeds – it is the milling head that was designed to meet all shop needs.

Add to these the basic advantages of the U. S. Vertical Miller. You can easily see why it's the milling machine that "does more work more easily."

Detailed literature on request.
The U. S. Burke Machine Tool Division.
32 Brotherton Road, Cincinnati 27, Ohio.

more versatile
Feed infinitely variable from .002" to .008" while in operation

greater capacity
5¼" power quill travel; 800 lb. down thrust

more convenient
Supplemental hand feeds

increased rigidity
Enclosed hard chrome plated quill with internal lock

THE U·S·Burke MACHINE TOOL DIVISION

The "EXTRAS" are STANDARD on Bucyrus-Erie Transit Cranes



BUCYRUS ERIE

Any two carrier-mounted cranes look very much alike. You can tell the difference only by an extensive comparison of features. When such a comparison is made, Bucyrus-Erie Transit Cranes top the field because so many features that are "extras" at additional cost on other cranes are furnished as standard equipment on Bucyrus-Erie machines. Here's a rundown of such features and what they can mean to you on your material handling jobs.

Power controlled lowering for main hoist line on lifting crane permits delicate positioning of loads.

Friction swing brake, in addition to regular swing lock, permits more accurate spotting and holding of boom point over desired position.

Power controlled boom hoist, fully independent of all other functions, provides high accuracy boom control in crane work.

Safety boom stops, designed to prevent boom from accidentally snapping over center and striking cab, are furnished on all machines equipped for lifting crane service.

Pendant-type boom suspension with 8 parts of operating line between bridle and boom point is ideal for changing boom lengths conveniently.

Open-throat boom design permits easy rigging of multi-part lines.

Extendible outriggers, two on each side of carrier chassis, provide added stability for swinging capacity loads.

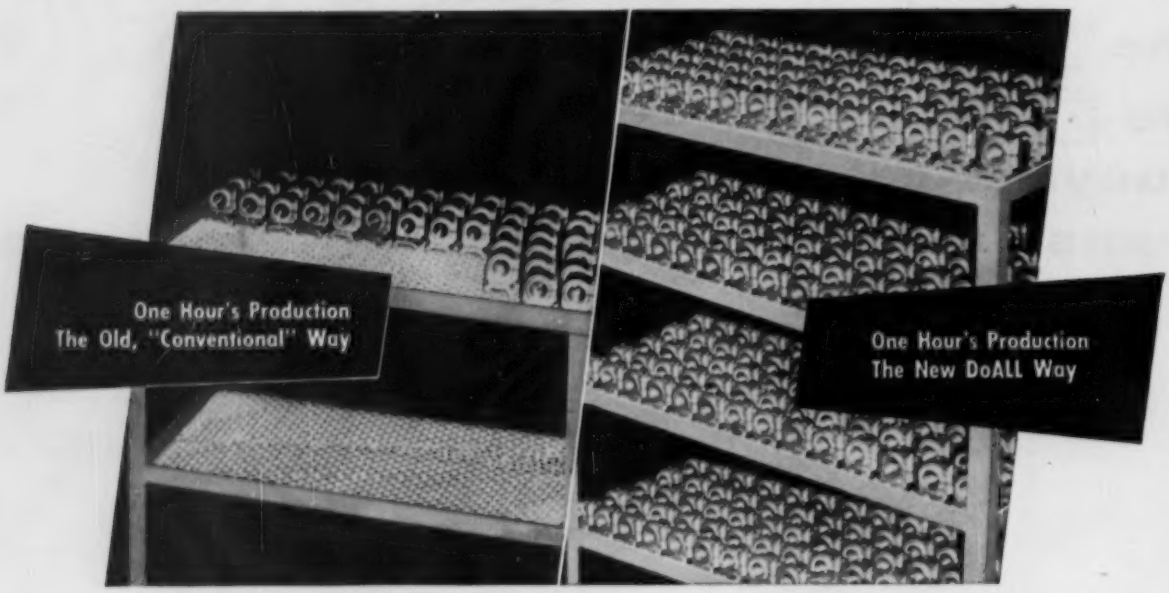
Transit Cranes are offered in two sizes — the 15-ton Model 15-B and 25-ton Model 22-B. See your nearby Bucyrus-Erie distributor for full information on the size machine you need.

124555C

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

There is a New Machining Concept to Cut Your Production Costs

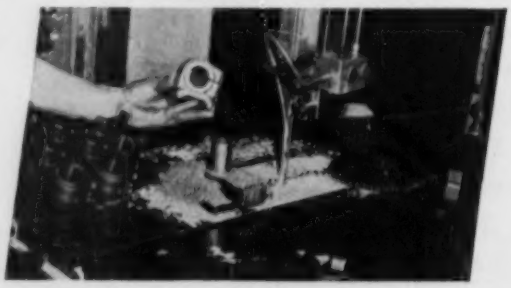


THE pictures above show the cost-reduction opportunities of modern production band machining! The job is that of cutting slots in cast bronze clamps. Formerly done with a slitting saw on a milling machine, production was about 38 pieces per hour. Now done with a DoALL production band machine, production is nearly 250 pieces per hour.

Look at the simple, inexpensive fixture shown at the right. Slip the work in position, push a button and the hydraulic power feed table carries it into the continuous-cutting band tool. Upon completion of the cut the table backs out. An integral coolant system promotes high cutting rates, insures good finishes.

Great usefulness of the machine is assured by the "non-restricted geometry" of band machining—cuts in the workpiece can be made at any angle or in any direction.

Faster cutting, greater versatility, simpler fixturing, lower tool cost, lower capital investment—production band machining is the



cost-reducing answer to thousands of production machining operations. Ask for a free demonstration at your plant. Call your local DoALL Store (see classified directory), or write: *The DoALL Co., Des Plaines, Ill.*

DoALL

PB-11

NEW COLOR FILM—"Production Band Machining" now available showing operation of this new machining concept.



Friendly DoALL Stores... (in 40 cities)

Personalized Service...Complete Stocks...Local Delivery



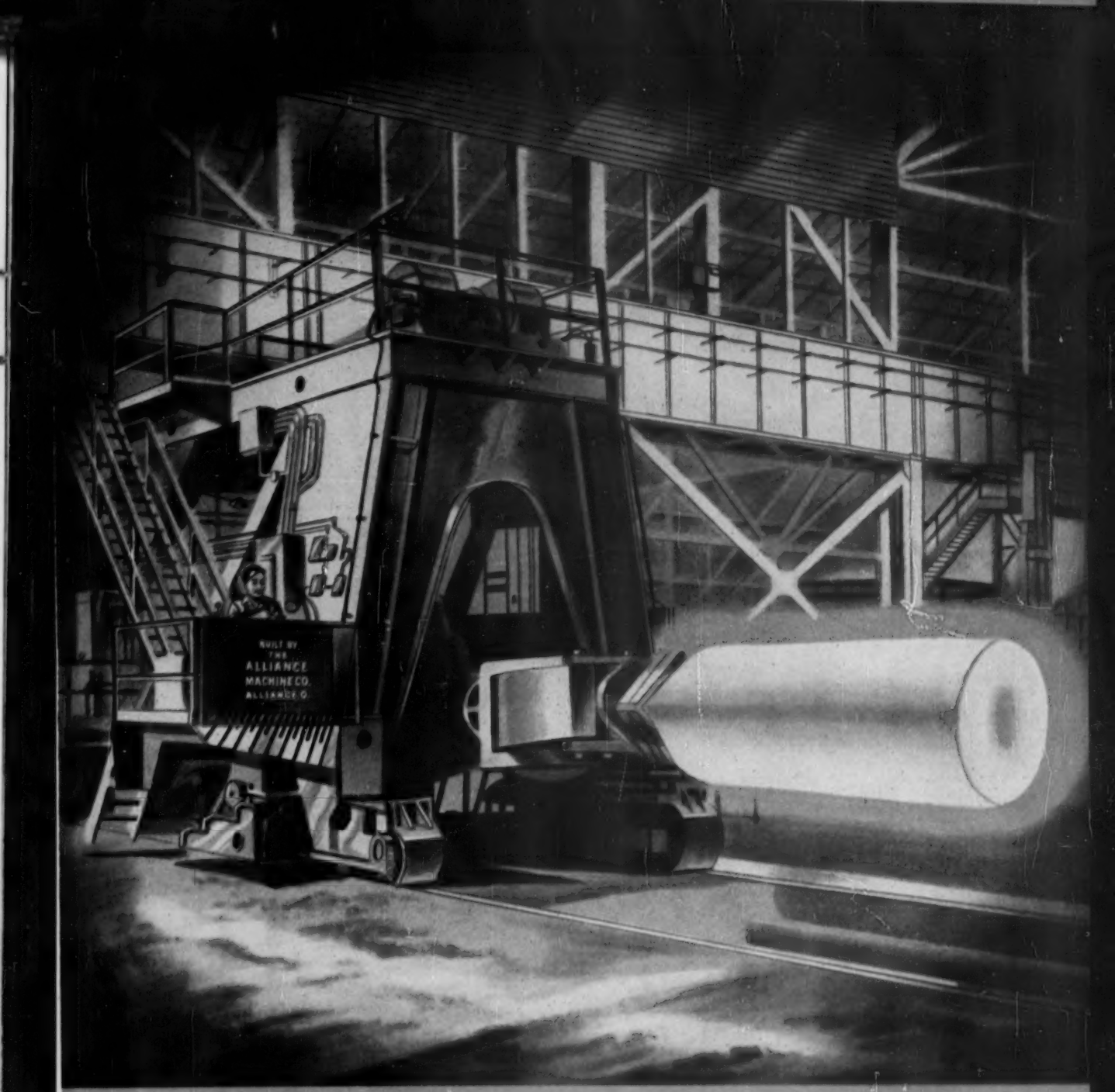


EDUCATIONAL STUDY WALL CHARTS

Economic Principles

$1.00 each postpaid

Lower quantity prices.



Alliance

20-TON

FORGING MANIPULATOR

• The Alliance Machine Company builds manipulators for all types of forging work.

The manipulator shown here is designed to handle 20-ton ingots and is equipped with hoist, leveling device, longitudinal motion and power grip revolving tongs.

This manipulator is effectively cushioned to reduce impacts, thereby reducing jar to operator and equipment.

By means of finger-tip control operator can regulate all motions from sitting position.

Give Us The Runway And We'll Lift The World

THE ALLIANCE MACHINE COMPANY

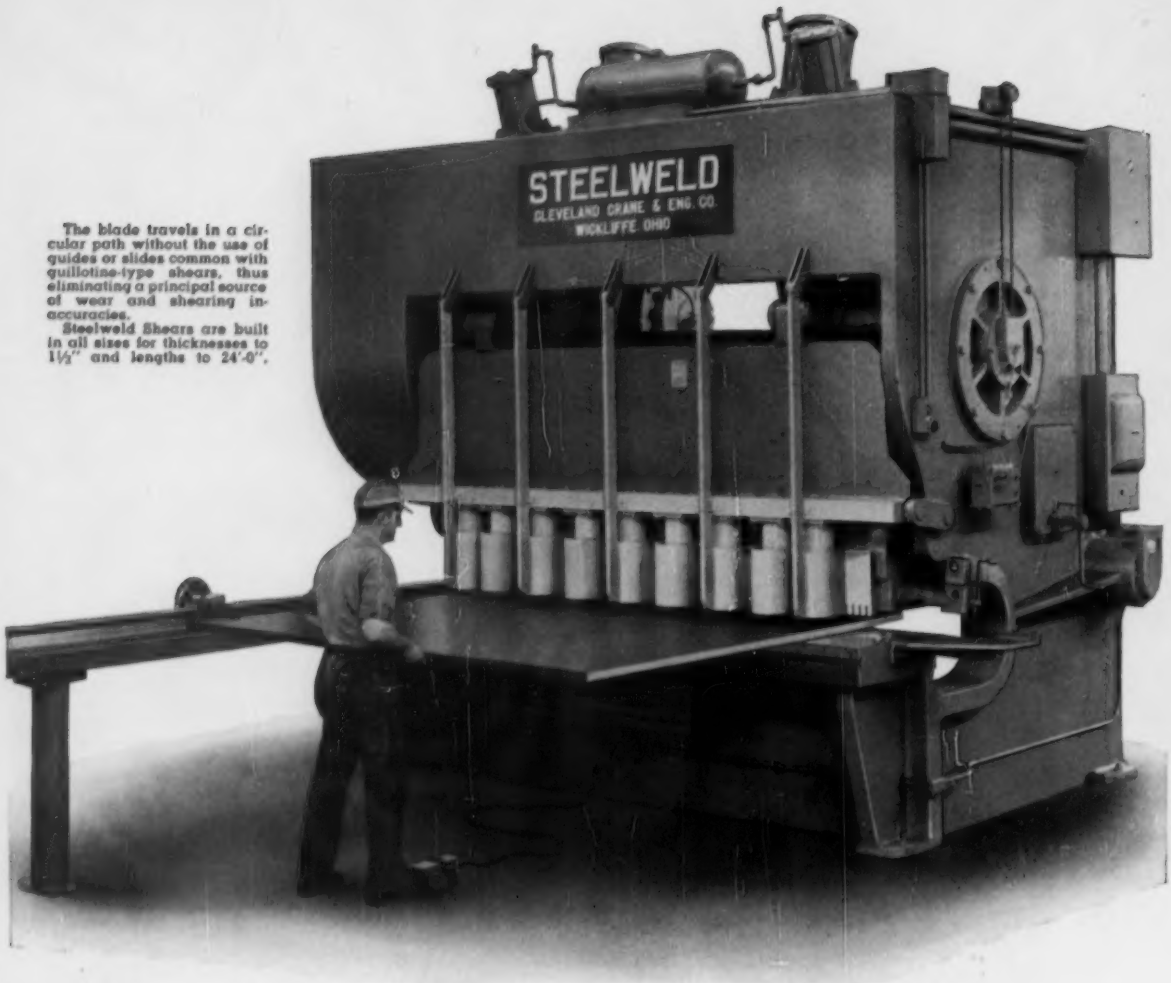
FOUNDED 1901 • MAIN OFFICE: ALLIANCE, OHIO

World's largest builders of world's largest cranes

LADLE CRANES • GANTRY CRANES • FORGING MANIPULATORS • SOAKING PIT CRANES
STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATION • COKE PUSHERS

The blade travels in a circular path without the use of guides or slides common with guillotine-type shears, thus eliminating a principal source of wear and shearing inaccuracies.

Steelweld Shears are built in all sizes for thicknesses to 1½" and lengths to 24'-0".



CUTS 1½" PLATE

22 cuts per minute can be made in plate up to 1½"x8'-0" with this powerful, heavily constructed shear.

Operation is noticeably quiet because blade counterbalances cushion the blow.

All thicknesses are easily cut with accurate, smooth, burr-free edges because of Steelweld's popular fast micro-set knife adjustment.

Steelweld's low-inertia clutch-brake unit provides quick, positive clutching and braking with very little slippage. Thus heat and wear are minimum.

Carefully size up this machine or any shear in the Steelweld line, and we believe you will agree that Steelwelds are the most outstanding available today.



GET THIS BOOK!

CATALOG No. 9011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

4844 EAST 282ND STREET, WICKLIFFE, OHIO

STEELWELD PIVOTED BLADE SHEARS



USE Superior FACILITIES

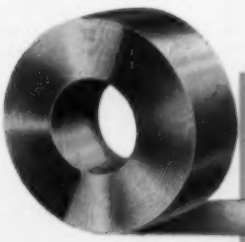
to custom roll your special strip steels !

YOUR SPECIAL FERROUS AND NON-FERROUS METALS ROLLED AS YOU WANT THEM

Uniform thicknesses .071 to .200 and in widths up to 16" depending on width and grade needed.

SUPERIOR has the men, methods and modern equipment to deliver outstanding performance for your special requirements.

Complete, Modern Cold Rolling and Annealing Facilities also available.



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626 Fisher Building

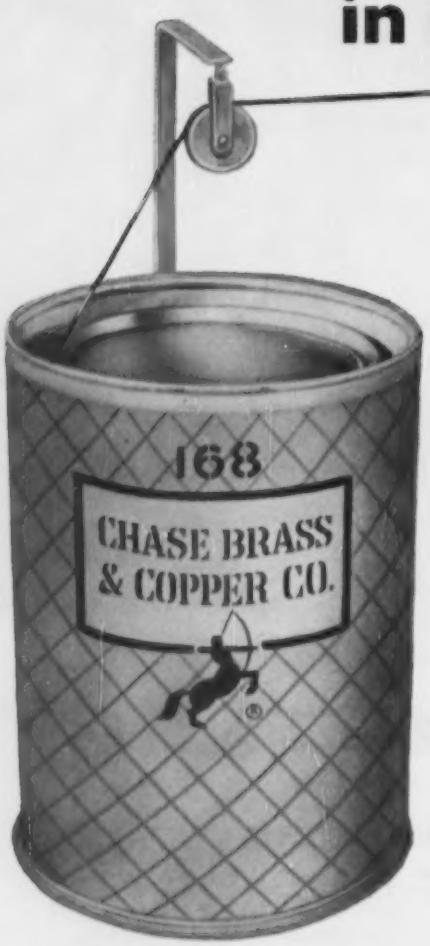
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CUT Wire forming costs with CHASE® WIRE in new *Payoffpaks*!

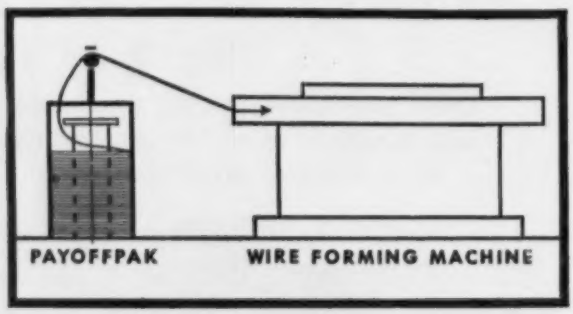


Now, in this compact, easy-to-handle PAYOFFPAK you can get a continuous length of Chase copper alloy wire weighing 400 to 500 pounds!

This new Payoffpak puts an end to frequent set-up of wire-forming machines . . . means *more* continuous, economical operation, *less* costly down time!

You'll like the easy way this Payoffpak handles, the space-saving way it stores . . . and the way it protects the shining surface of Chase copper alloy wire from rough handling in transit and storage.

Ask your Chase Wholesaler or nearest Chase Warehouse about the new Payoffpak the next time you order copper alloy wire.



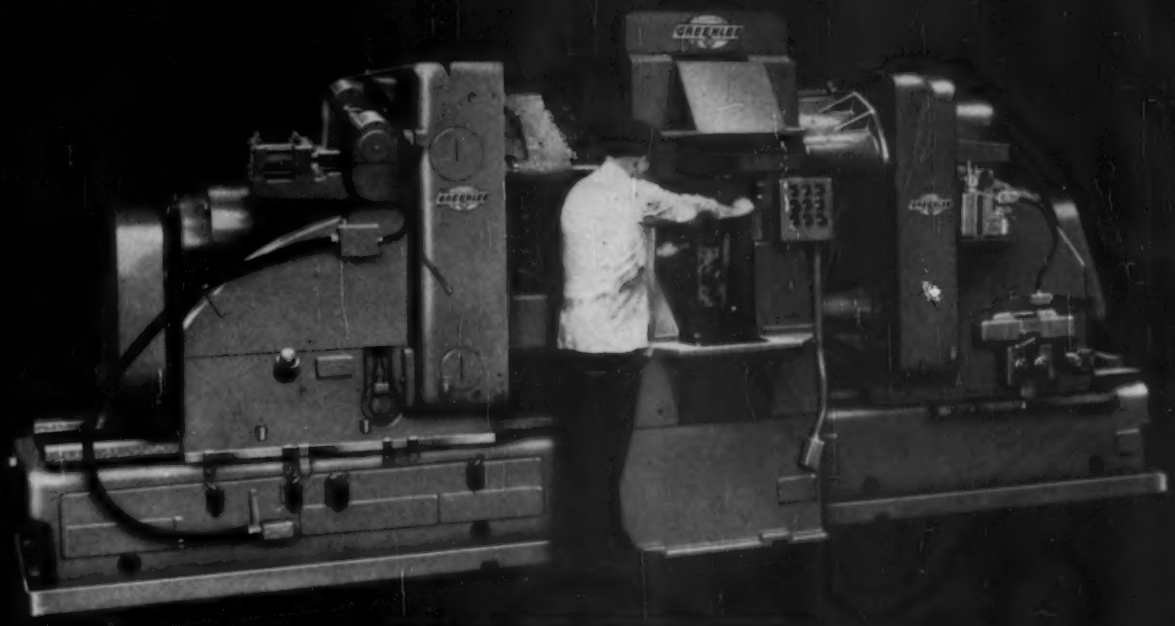
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Charlotte†	Denver	Kansas City, Mo.	New Orleans	Rochester†	(†sales office only)



GREENLEE

special-purpose machines for profitable mass production



Master brake cylinder machined on above Greenlee Special Machine.

THEY SAVE WORK...THEY SAVE MONEY

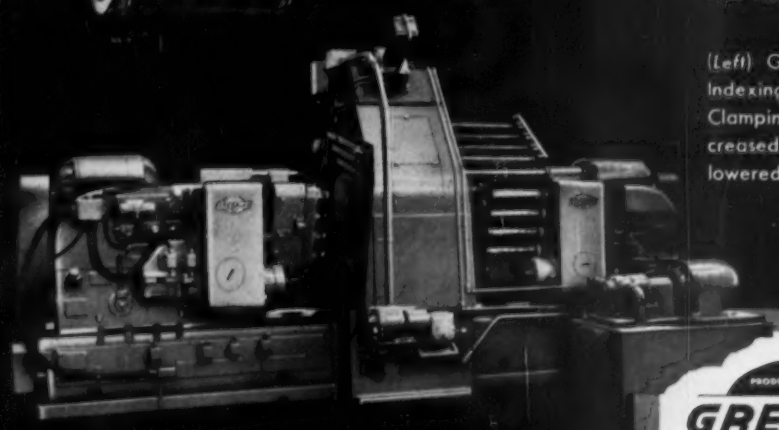
If you are being outdistanced in today's swift race for production...faced with narrowing profit margins...it will pay to investigate Greenlee Special Machines. Savings effected on drilling, reaming, boring, counterboring and tapping operations will quickly amortize your invested dollars.



Wheel cylinder machined on Greenlee Special Machine shown below.

(*Above*) Greenlee Horizontal Indexing Machine designed for processing master brake cylinders has proved itself with raised quality and lowered costs.

(*Left*) Greenlee Two-Way Horizontal Indexing Machine equipped with Power Clamping and Automatic Unloading increased previous production rates and lowered costs.



WRITE FOR COMPLETE INFORMATION

PRODUCTION MACHINERY
GREENLEE

GREENLEE BROS. & CO.
1885 MASON AVENUE
ROCKFORD, ILLINOIS

ONE OF A SERIES

You Get Many Benefits
By Specifying VICKERS Hydraulics

Reduced Maintenance Costs

Vickers Oil Hydraulic Equipment is built to minimize maintenance . . . has an outstanding performance record. Nevertheless, Vickers recognizes that sooner or later any piece of machinery requires overhaul. So we have developed a service department of exceptional efficiency . . . one that is convenient for you by reason of full time factory-trained service men working out of our offices from coast to coast.

Shown below are several of the practical aids provided to assure you quick and economical service on Vickers Hydraulics.

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DIVISION OF THE SPERRY CORPORATION
1420 OAKMAN BLVD. • DETROIT 32, MICH.
Application Engineering Offices: • ATLANTA CHICAGO AREA (Brookfield) • CINCINNATI • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Summit, N. J.) • PHILADELPHIA AREA (Media) PITTSBURGH AREA (Mt. Lebanon) • ROCHESTER ROCKFORD • SAN FRANCISCO AREA (Berkeley) SEATTLE • ST. LOUIS • TULSA • WASHINGTON WORCESTER



SPARE PARTS RECOMMENDATIONS

Our service men will study your situation and make practical recommendations on your spare parts inventory . . . will check your inventory and provide you with printed lists of parts usually required.



SERVICE KITS

Packaged repair kits for many Vickers products are available. These provide all needed parts for quick repair in the field and at minimum cost. In addition, these kits simplify stock problems by reducing the number of loose parts.



PREVENTIVE MAINTENANCE

Our service men will gladly set up for you an effective program of preventive maintenance on a timetable basis. This avoids costly down time and keeps maintenance costs at a minimum.

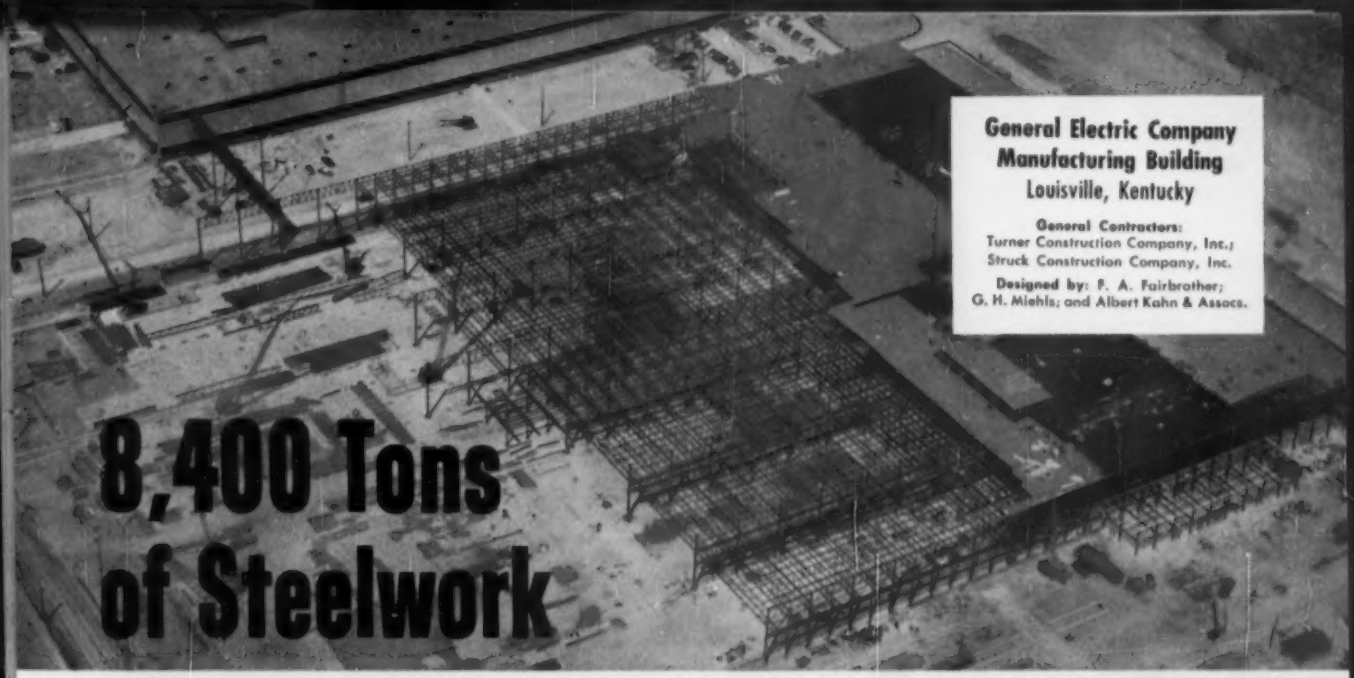


SERVICE SCHOOL •

Vickers maintains a Hydraulics Training School for engineering, maintenance and service personnel of both original equipment manufacturers and their customers. For further information, please contact Product Service Department directly.

7143

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921



General Electric Company
Manufacturing Building
Louisville, Kentucky

General Contractors:
Turner Construction Company, Inc.;
Struck Construction Company, Inc.

Designed by: P. A. Fairbrother;
G. H. Miehls; and Albert Kahn & Assocs.

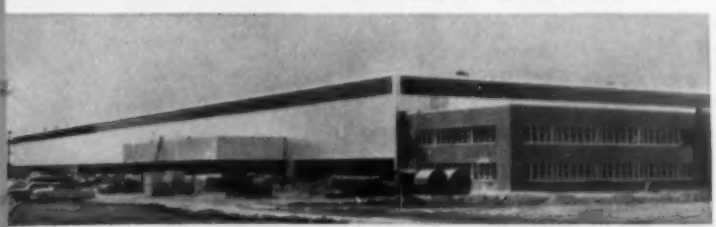
8,400 Tons of Steelwork

erected in 3½ months by AMERICAN BRIDGE



This Pipe Trestle is 190′ long x 8′ wide x 44′ high and connects the new manufacturing building with the existing building as shown in left background of the aerial view above.

Below is a corner view showing the completed structure.



● If you need a new mill, factory, warehouse, or office building in a hurry, American Bridge can fabricate and erect your structural steel requirements with dispatch.

As you see from the aerial view above, this new General Electric Company Plant at Louisville, was no small project! This view shows Manufacturing Building No. 5 which is the largest of five huge buildings being constructed at this project for the manufacture of General Electric Company's Major Household Appliances. Big as this building is, AMERICAN BRIDGE erected the steel framework, all 8,400 tons of it, in only three months and sixteen days!

This new manufacturing building is a special high level industrial structure, 700′ wide x 1,000′ long and with a 43′ clear height to the bottom chord of the main trusses. In addition, the building contains two intermediate mezzanine floors over a major portion of the area. Attached alongside the manufacturing building is a paint and oil storage building 36′ wide by 180′ long. AMERICAN BRIDGE also erected a pipe trestle 8′ wide x 190′ long and 44′ high connecting the new manufacturing building with a building previously constructed.

This new General Electric building and the pipe trestle are good examples of American Bridge fabricating and erecting "know-how." You can depend on AMERICAN BRIDGE to handle any type of steel-frame construction with thoroughness and speed . . . any time . . . anywhere. If you would like to know more about the advantages of having AMERICAN BRIDGE fabricate and erect the steelwork for your next building, just contact our nearest office.

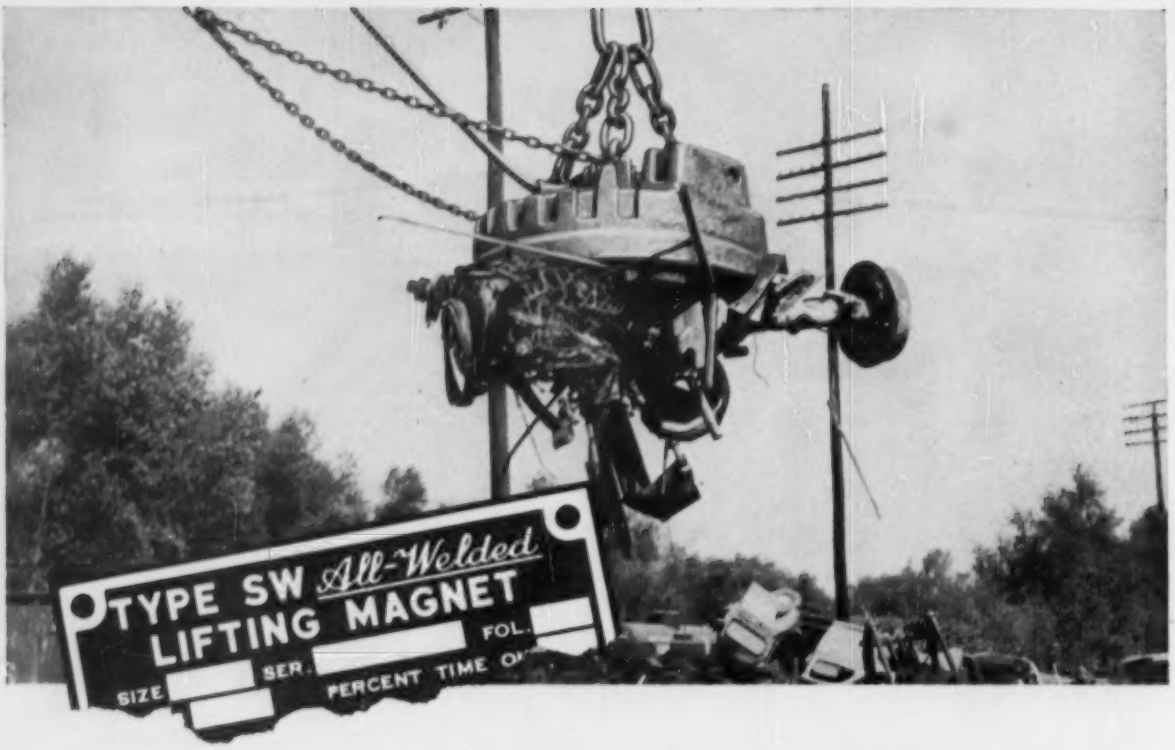
AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE · ATLANTA · BALTIMORE · BIRMINGHAM · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DALLAS · DENVER · DETROIT · ELMIRA · GARY
MEMPHIS · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ROANOKE · ST. LOUIS · SAN FRANCISCO · TRENTON UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS

UNITED STATES STEEL



More Features of EC&M TYPE SW ALL-WELDED LIFTING MAGNETS Assure More Dollar Value





EC&M Type SW ALL-WELDED Lifting Magnets have a new look . . . inside as well as outside. Stronger, better designed to withstand the hard knocks encountered in magnet operation, they are easier to maneuver, and through high lifting capacity they reduce handling costs.

The magnet-coil is wound between turns with purer, thinner asbestos tape, with its strength increased by impregnation with EC&M No. 281 compound. Between layers, the insulation is a new product—ECAMICA board which is moisture-free, has high dielectric strength and excellent mechanical ability. A new fabricating process locks the windings against movement.

Look at the features pictured here in the top and bottom views of the magnet. Remember, too, that these EC&M magnets are ALL-WELDED to keep pole shoes tight—to keep moisture out—to increase the efficiency of the magnetic circuit and to prolong magnet life.

write for bulletin 900

1968

THE ELECTRIC CONTROLLER & MFG. CO.

4498 LEE ROAD ★ CLEVELAND 28, OHIO

Why you get top savings with Norton diamond wheels . . .

The "CROWN JEWELS" of carbide grinding



Buying diamond wheels calls for the same trust in the supplier as buying gem diamonds. Right there is where Norton's long leadership in diamond wheel development and manufacture is your best possible safeguard. Only Norton offers you such long diamond wheel experience to help you produce more at lower cost.

Check these reasons why Norton diamond wheels are the recognized "Crown Jewels" of the entire field:

Norton was first to introduce the three major diamond wheel bond types — resinoid, metal and vitrified.

The sizing, grading and laboratory checking of diamonds used in Norton diamond wheels is done in Norton's own plant.

Norton duplicates specifications for each wheel type and size with utmost accuracy for uniform top performance.

The line of Norton diamond wheels is complete, with sizes and types covering every field — carbides, stone, glass, ceramics, electronics, etc. — where diamond wheels are used.

Norton diamond wheels for every need are quickly available from full stocks in Worcester and five strategically located warehouses.

See Your Norton Distributor

for further facts on Norton diamond wheel performance and applications. Ask him for the 142-page illustrated booklet, *Grinding Carbide Tools.* Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities, listed under "Grinding Wheels" in your phone directory, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

Making better products... to make your products better

NORTON

and its BEHR-MANNING division

NORTON: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes

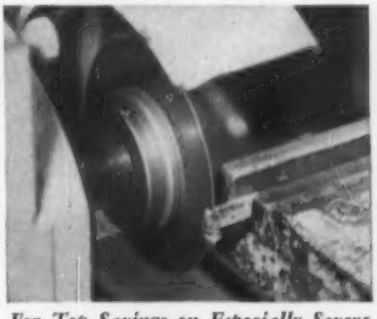
W-1612



For Top Savings in Production Grinding of single point carbide tools, use Norton vitrified bonded diamond wheels. Combining fast cutting action with high resistance to grooving, they're also ideal for grinding chip breakers and for a wide range of precision grinding. This Norton engineered bond holds each diamond particle for maximum useful cutting action and long, money-saving wheel life.



For Top Savings in Multi-Tooth Grinding, Norton resinoid bonded diamond wheels assure uniform grinding to each individual cutter tooth. Their extra fast cutting action and long service life are big advantages in precision sharpening. Two bond types — regular, for wet grinding and B6, for dry applications.



For Top Savings on Especially Severe Single Point Tool Grinding and where long life is most important, Norton metal bond diamond wheels are recommended. They're also most economical for many other jobs — such as cutting-off sintered carbide blanks, glass, ceramics, germanium and stone.

Announcing

KENNAMETAL* GRADE K21



the new, superior General Purpose steel-cutting carbide

K21 . . . the new Kennametal General Purpose steel-cutting grade . . . is out-performing all other carbides in its field, even K2S, the leader of all General Purpose grades in the carbide industry for over a decade. Its superior performance is due to high edge strength, combined with superior wear qualities and resistance to cratering. K21 was created to help get highest productivity from today's high-speed machines, yet, due to its range, it does an excellent job on older, slower-speed machines.

Naturally, K21 has been thoroughly tested. It has demonstrated great versatility on planing, turning, boring, plunging, and interrupted cutting . . . on such materials as forgings, sandy castings, centrifugal castings, plate, bar stock, and weldments.

K21 simplifies the problem of grade selection since it performs in all three groups—general steel-cutting, heavy roughing, and finishing. It is ideal for machining the newer high tensile strength steels, has high resistance to thermal shock, and is less susceptible to grinding cracks.

Why not try Kennametal Grade K21 *now!* It is available from stock in the most popular blanks, tools and inserts. Order today. KENNAMETAL INC., Latrobe, Pennsylvania.

K21 OFFERS

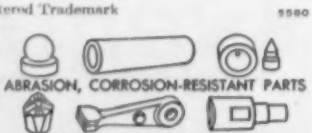
- Superior Wear Qualities
- Exceptionally High Edge Strength
- High Resistance to Thermal Shock

K21 is designed for cutting stainless steels, nickel steels, heat-resistant alloys, and high tensile alloy steels.

*Registered Trademark 5500

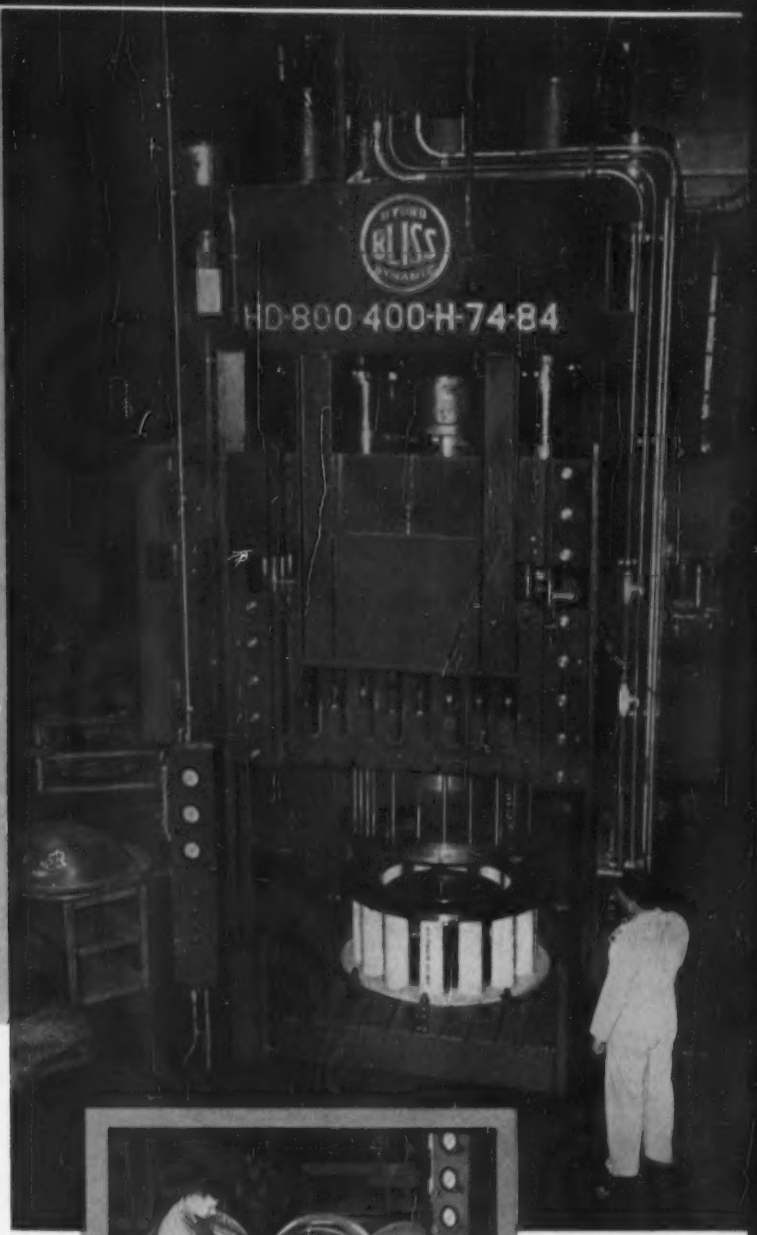


INDUSTRY AND KENNAMETAL
...Partners in Progress



DOUGLAS AIRCRAFT LICKS A TOUGH ONE . . .

uses 800-400-ton Bliss Hydro-Dynamic Press to cut reject rate by 68%



FACED with a better than 70% reject rate on 52-in. diameter aluminum shells, a west coast sub-contractor almost sunk the project and himself in the bargain.

The part required a difficult deep draw—and then halfway through the draw cycle—a stretch into the final shape. Despite the stretch, the wall had to be held to a close tolerance.

To solve the problem, Douglas and Bliss engineers collaborated on the design of a special Bliss Double-Action Hydro-Dynamic Press—one which has a 100% pin pattern on the blankholder to give positive holding pressure all around the blank. That feature, plus precision guiding of the slide and accurate tooling, did the trick . . .

Rejects were cut to less than 2%

You can expect results like that when you use the right press for the job. It may be a single-, double- or triple-action press. It may require a rubber pad set-up. It may be a standard or a special-purpose press. But no matter what your problem, you can be sure of impartial counsel from your Bliss press engineer. Bliss, world's largest manufacturer of presses, makes both mechanical and hydraulic—grinds no ax for either—only for the *one* proper press.



For HYDRAULIC Presses, too ... it pays to specify BLISS

BLISS
SINCE 1857

is more than a name . . . it's a guarantee!

E. W. BLISS CO., Canton, Ohio
PRESSES, ROLLING MILLS, SPECIAL MACHINERY

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E. W. BLISS (ENGLAND) LTD., DERBY

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ALWAYS FINISHES FIRST

—and lets buffs live up to 400% longer



fast cutting, easy cleaning with

Liquimatic®

the perfect liquid compound for all metal finishing

It's a fact—Liquimatic's continual lubrication lengthens buff life up to 400%. It's not hard to figure that such a healthy saving on buffs soon pays for a complete Liquimatic Application System—a system that *continues* to save you money in all phases of your buffing and polishing operations.

Liquimatic saves on production costs because it's completely automatic. An electrically timed system feeds Liquimatic Compound to the buff in exactly the right amount to produce the exact rate of cut you need. There's no compound wasted, no nubbin problem. No hand application, no changing bars, either—can you see any savings here in your buffing room?

Check the other features of Liquimatic Liquid Buffing Compound... then write today for your free copy of Liquimatic's folder that tells the whole cost-saving story of Liquimatic in *your* buffing room.

Liquimatic ...

gives more buff mileage

These additional Liquimatic features mean real savings in terms of time, money, safety—

• completely automatic • fast cutting • lower compound cost • easy cleaning • adhesive slow-wearing buff face • non-settling • high flash point • long storage life • sprayable viscosity

1493

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

HANSON-VAN WINKLE-MUNNING COMPANY

Main Office and Plant, Matawan, New Jersey

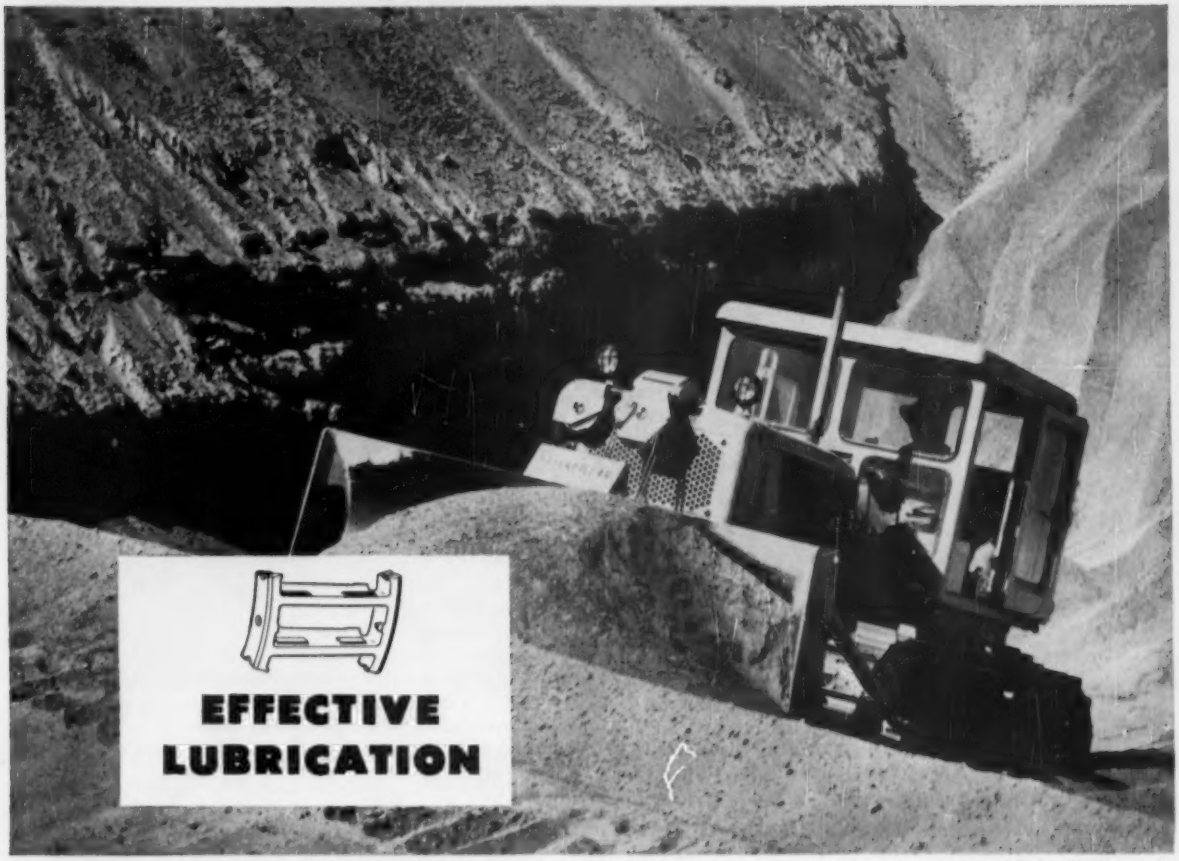
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INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

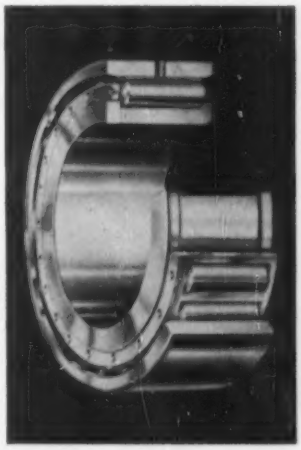
IN THE CRUSHED STONE INDUSTRY, TORRINGTON *Bearings are used in many applications including crushers, screens, shovels, cranes, pulverizers, grinding mills and rotary kilns.*



Photograph courtesy of Caterpillar Tractor Co.

TORRINGTON Radial Roller Bearings

are designed with one-piece bronze retainer that keeps rollers correctly aligned and effectively lubricated



Here are other reasons why TORRINGTON RADIAL ROLLER BEARINGS can meet your load and speed requirements. Only the finest quality steels, heat treated according to the most modern methods, are used in manufacture.

Precision tolerances and finishes on both rollers and races guarantee low eccentricity and uniform load distribution.

One-piece, cast-bronze cages help minimize wear, facilitate lubrication, and lengthen bearing life.

Machined pads in each cage-pocket guide the rollers accurately at the pitchline.

Specify TORRINGTON RADIAL ROLLER BEARINGS for your equipment. They are interchangeable in all types and sizes and custom engineered to meet the toughest, heavy duty assignments.

THE TORRINGTON COMPANY
South Bend 21, Ind. • Torrington, Conn.

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TORRINGTON RADIAL ROLLER **BEARINGS**

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

CHECK THE ADVANTAGES OF STAINLESS STEEL FASTENERS



✓for boosting product quality!

Where appearance and performance call for quality parts, don't overlook the advantages of stainless steel fasteners. Take the illustrated E. W. Ferry fasteners, for example. They're priced right in line with quality fasteners of other materials. Yet they offer all the extra qualities stainless steel brings to any part — high tensile strength . . . attractive, rust-resisting finish . . . and remarkable resistance to heat and corrosion. In almost any application they outlast, many times over, fasteners of nonresistant or plated metal. They cut maintenance costs, too. For even after years of service, disassembling rust-free stainless fasteners is always a fast, easy operation.



✓for reducing production costs!

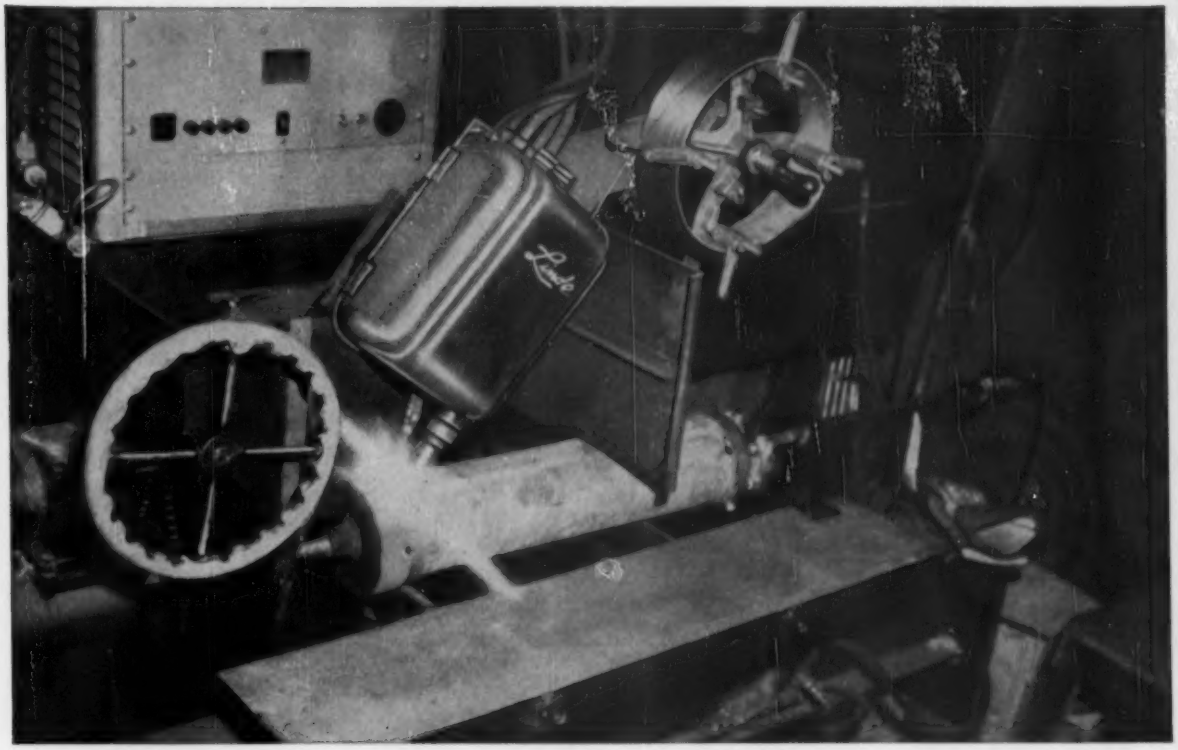
The hardness of stainless steel fasteners results in substantial savings on the assembly line. Work is faster, results are better — simply because stainless screw-heads are less apt to burr and nick. This means major savings, for even a slipping screwdriver can seriously damage both the screw and the parts being assembled. Stainless steel fasteners cut tooling costs, too. For they are now available in practically every size and description.



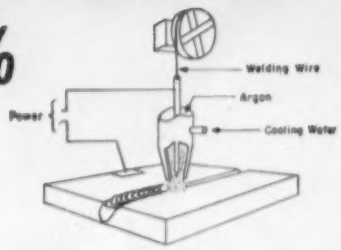
Crucible now offers stainless fastener wire in all diameters . . . in suitable tempers . . . in a variety of finishes, including bright and several metallic and nonmetallic coatings . . . in all standard grades. For prompt delivery of the stainless steel wire you need — or for your free copy of Crucible's new, 32-page catalog "Rezistal Stainless Steel Wire" — call or write to *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America



Sigma Welding...Cuts Costs 36% Ups Steel Fabrication 93%



By shifting from manual arc welding to mechanized sigma welding, production of 31-in. long, 11-ga. steel condensers was almost doubled—costs were cut over a third—and unit quality greatly improved. These sigma welded condensers have been tested to hydrostatic pressures of 2,800 lb. per sq. in. with no sign of failure.

All completed condensers are subject to an air pressure test under water, and a supersensitive electronic leak detector . . . Rejects have been practically eliminated by sigma welding. Like many other products throughout industry, these condensers are being fabricated faster and more economically than ever before. Here are some sigma welding features—

- Uses any standard d.c. or constant potential power supply. With c.p., no control is necessary to maintain constant arc voltage, starting is faster and operations more efficient.
- Makes smooth welds in all type joints—on all commercially fabricated metals.
- Welding speeds exceed 100-in. per minute in many operations . . . And sigma welding joins metals up to ¼-in. thick in one pass. Start saving now, call your local LINDE representative for more information—and ask for Form 7942 "Modern Methods of Joining Metals."

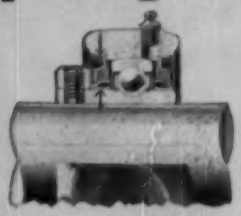
Linde Air Products Company
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada: DOMINION OXYGEN COMPANY
Division of Union Carbide Canada Limited, Toronto
The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.

Linde Trade-Mark

Next time you're bearing comparing . . .

look for these

important differences

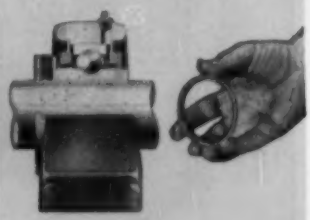


POSITIVE PROTECTION from moisture, dust and dirt is accomplished by seals extending from housing to inner ring. All aligning surfaces are enclosed in lubricant chamber.

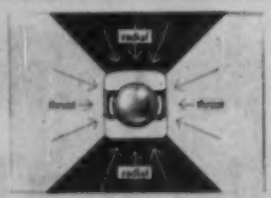


Series 200 Ball Bearing Pillow Blocks are part of industry's most complete line of ball and roller bearing blocks.

AUTOMATIC RELIEF OF EXCESS GREASE PRESSURE. Patented revolving inner seal members have escape holes enabling excess lubricant to pass out through opening around periphery of seal. No danger of seal being forced out . . . no chance for high pressure to damage bearing.



HIGHEST CAPACITY obtainable to carry heavy radial, thrust or combination loads is provided by single-row, deep-groove design.



GREATER STRENGTH. Base of block is cored to provide uniform metal thickness, assuring a sound casting, free from distortion.



They're all present only in LINK-BELT ball bearings

THESE important bearing differences show up in the performance of your equipment. For instance, a bearing may be subjected to shaft misalignment throughout its working life. Link-Belt's lubricated self-aligning feature assures free rolling . . . maintains maximum efficiency under any service condition. And Link-Belt alone offers that advantage in both ball and roller bearing blocks.

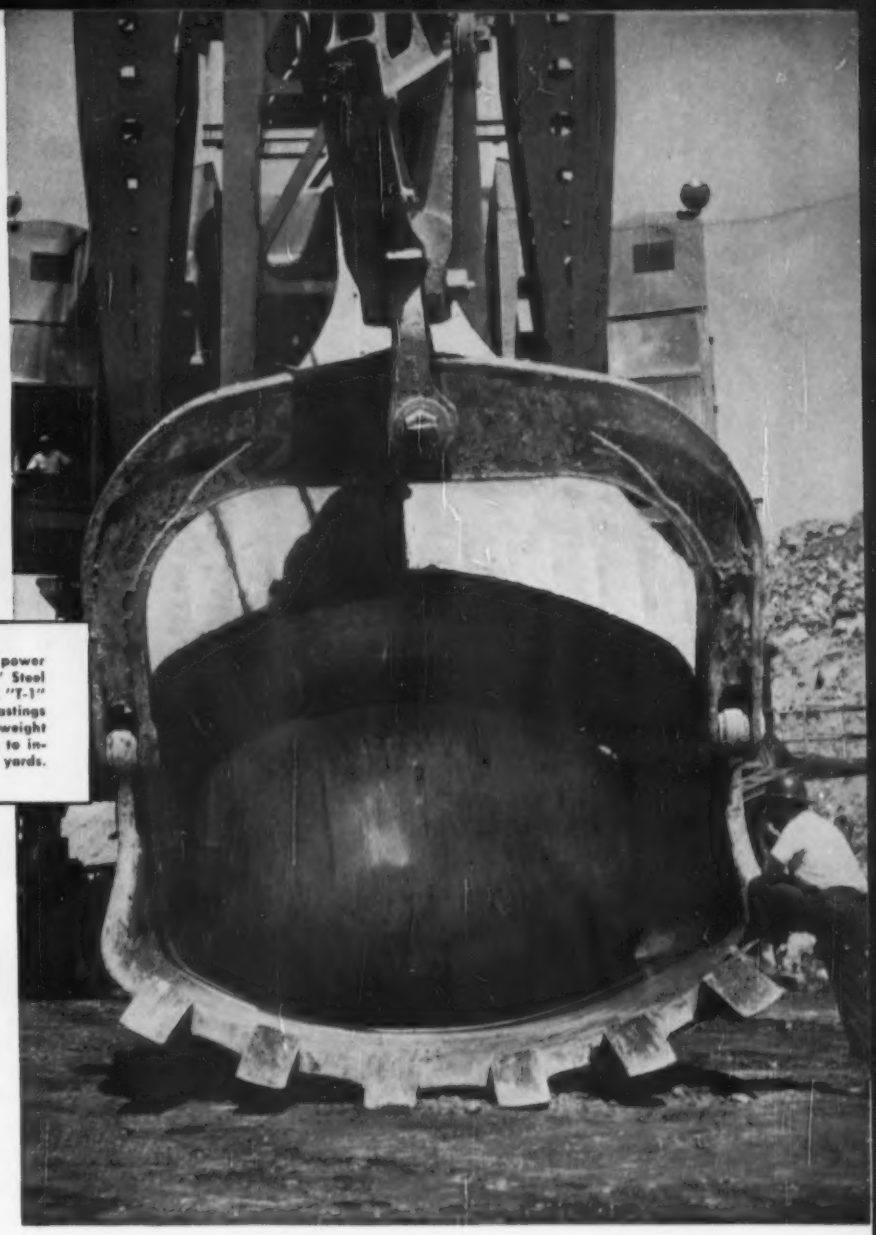
Whatever your bearing requirements, look to Link-Belt. All types and sizes of Link-Belt bearings are available from stock. Ask your Link-Belt office or authorized stock carrying distributor for Data Book 2550, containing complete information on the entire Link-Belt line.

LINK-BELT

Ball and Roller Bearings

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13.714-A





The entire shell of the bucket on this 50-cu. yd. power shovel is fabricated from ¾" and 6½" "T-1" Steel Plate. Liner plates are made of ½" "T-1" Steel. "T-1" Steel Plate only 6½" thick has replaced large castings a foot thick in the lip of the bucket. Lighter weight construction with "T-1" Steel made it possible to increase the cubic capacity of the bucket by ten yards.

How USS "T-1" STEEL in big machines cuts weight, cuts cost, increases service life

Hanna Coal Company just can't afford to have this giant 50-cu. yd. shovel break down. This machine can move 2,280,000 tons of material a month, and it must operate continuously—24 hours a day, 7 days a week—to pay off.

Strong, weldable "T-1" Steel has improved the performance of this incredibly rugged machine, and it also has cut cost and weight. It enables the designers to use *fabricated* parts in place of larger, heavier, more expensive castings. And these lower-cost fabricated parts actually *last longer* than castings. As a result, Hanna Coal Company has standardized on "T-1" Steel for the vital parts of much of its heaviest-duty equipment.

Write for complete information on new USS "T-1" Steel. It has application in pressure vessels, rotating machinery, structural steel towers, steel mill equipment, big trucks, mine cars, and elsewhere.

Visit the U.S. Steel Booth
at the
AMERICAN MINING CONGRESS AND COAL SHOW
MAY 16-19, 1955
CLEVELAND, OHIO

UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS "T1" CONSTRUCTIONAL ALLOY STEEL

USS

5-475

UNITED STATES STEEL

Here's the most convenient way to make Refractory Concrete:



IT'S THAT SIMPLE—Castable Refractories completely eliminate the need of finding suitable aggregates . . . and grading them to the right sizes. Packaged Castables come to you with Lumnite* calcium-aluminate cement and selected aggregates already mixed—needing only addition of water. The resulting Refractory Concrete reaches service strength in 24 hours or less.

This convenient way of making Refractory Concrete speeds work and cuts labor costs. It simplifies tough jobs—and some Castables are suitable for use at temperatures of 3000°F. or higher.

REFRACTORY CONCRETE made with Castables is the *adaptable* refractory. Easy to place in any size or shape.

No cutting or fitting necessary when you pour furnace walls, door linings and special shapes. There's no volume change to bother about. Build heat resistant floors, furnace walls, arches and hearths—Refractory Concrete withstands severe thermal shock, resists spalling.

In fact, you'll find Castables tailor-made for speed and convenience on many Refractory Concrete jobs. Handy for repairs, too.

CASTABLES to meet specific temperature and *insulation* requirements are made by manufacturers of refractories and sold by their distributors. For further information, write to LUMNITE DIVISION, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

**"LUMNITE" is the registered trade mark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.*

IA-L-54R

ATLAS® LUMNITE for INDUSTRIAL CONCRETES

REFRACTORY, INSULATING, OVERNIGHT, CORROSION-RESISTANT

A UNIVERSAL ATLAS PRODUCT

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station



They were asked, "Why two when one will do?"

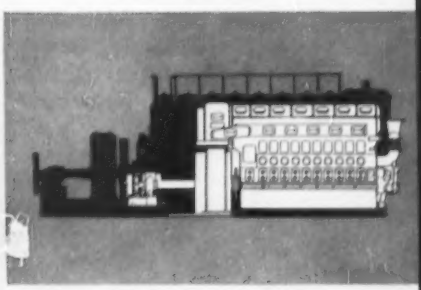
That's often the first reaction to the Fairbanks-Morse Opposed Piston Diesel . . . "Why two pistons in each cylinder?"

The answer given by the F-M Diesel Design Staff is quite simple: two pistons reacting to the forces of combustion in a common cylinder gives you greater horsepower per cylinder . . . more power per foot of floor space . . . and as it happens, a far more simple engine with 40% fewer moving parts to wear and maintain.

Only from Fairbanks-Morse can you get such originality and soundness of *new* design that assure outstanding performance. When next you need a Diesel Engine . . . or a Scale . . . an Electric Motor . . . or a Pump . . . look for the famous F-M Seal and see the difference that quality makes. Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago 5, Illinois.



The Secret is this cylinder liner that contains two pistons. It eliminates cylinder heads and their gasketed joints, intricate valve trains and their timing—all parts that require the time of skilled maintenance personnel.



The Result is a compact, lightweight diesel that permits installing *more* horsepower in the *same* space occupied by any other comparable engine. And horsepower for horsepower, the O-P is the easiest to maintain.

FAIRBANKS-MORSE

a name worth remembering when you want the best

DIESEL AND DUAL FUEL ENGINES · DIESEL LOCOMOTIVES · RAIL CARS · ELECTRICAL MACHINERY · PUMPS · SCALES · HOME WATER SERVICE EQUIPMENT · MOWERS · MAGNETOS

"bearing maintenance negligible"

on UNITED®
Blooming and Slabbing Mill Tables
SKF EQUIPPED

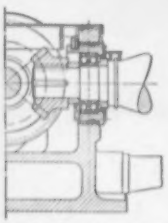
That's the report from United Engineering and Foundry Company who first tried out SKF Spherical Roller Bearings on mill equipment more than 25 years ago . . . since then on blooming and slabbing mill tables.

Then it was an innovation; now it's a *trend!*

Pictured here are United Engineering and Foundry installations in three mills—all in service over two years.

Throughout the steel industry, SKF Spherical Roller Bearings are not only going into *new* mills, but are also replacing other types of bearings that have been tried and found wanting in existing mills.





APPLICATION – Drawing shows how designers apply SKF Spherical Roller Bearings to both approach and delivery tables of blooming mills like the United Engineering & Foundry installation at Granite City.

SIGNIFICANCE – Table roll bearings under the manipulators particularly must be able to take it—*heavy, intermittent radial load—thrust load—shock load!* SKF Spherical Roller Bearings stand up in this application and there is *no* "pounding-out" of housing bores.

The three reasons that could make SKF Spherical Roller Bearings the answer to your anti-friction problems are:

1. Size for size, SKF Sphericals provide highest capacity.
2. Like all SKF bearings, they are made to the industry's highest quality standards.
3. SKF Field and Home Office Engineers, with many types and sizes of *ball* and *roller* bearings to choose from, can provide unbiased and sound advice on how and where to install what bearing.

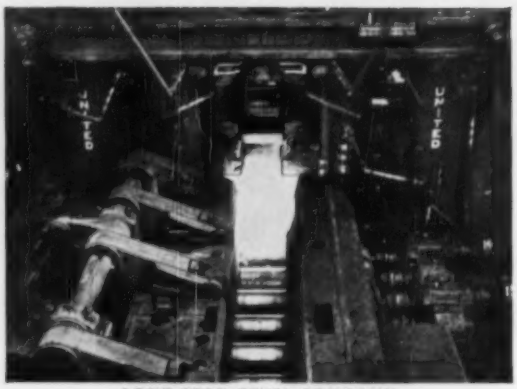
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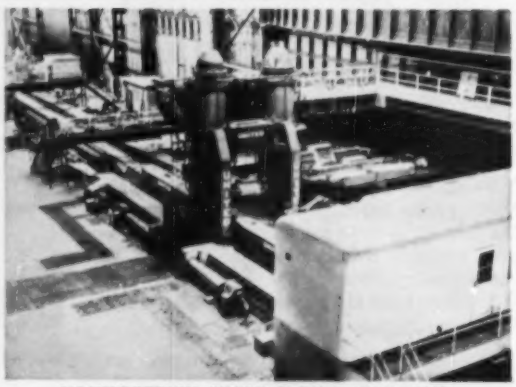
SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.,
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GRANITE CITY STEEL COMPANY

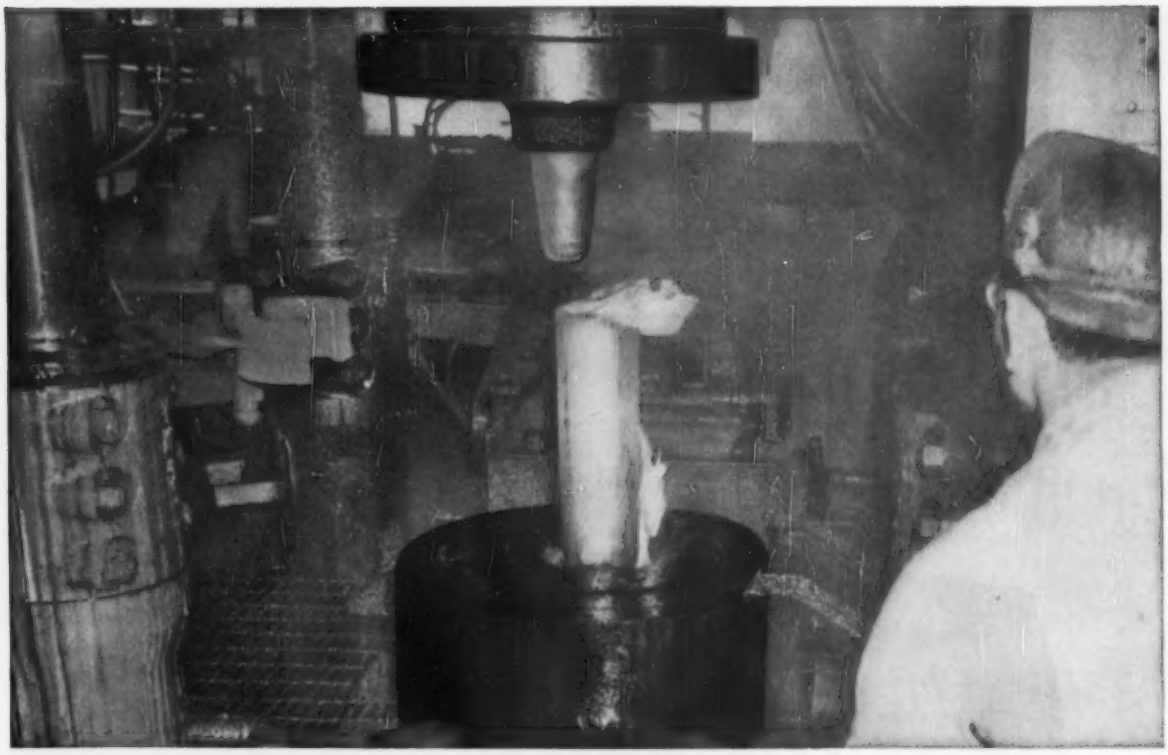


LONE STAR STEEL COMPANY



YOUNGSTOWN SHEET & TUBE COMPANY

SKF®
BALL AND ROLLER BEARINGS



Die Pot Life Increased 350 Per Cent

A deposit of HASTELLOY alloy C hard-facing rod has more than tripled the service life of the die pots used in this slugging and piercing operation. The hard-faced parts are exposed to severe impact and abrasion at high temperatures. Press tonnages required to perform the operation have been reduced from 30 to 50 per cent since the pots have been faced with HASTELLOY alloy C. This rather unusual plus value is due to the low friction characteristics of this nickel-base alloy.

Resists Chipping and Spalling

HASTELLOY alloy C is a tough, machinable, hard-facing alloy that can be applied to all common die steels. It has high tensile strength, good ductility and excellent resistance to chipping and spalling. It can be applied by the metallic-arc process, flows smoothly, and produces sound deposits. No special heat-treating or cooling procedures are needed.

No Grinding or Peening

When deposited, HASTELLOY alloy C has a hardness of 210 Brinell, and can be machined easily by ordinary die-sinking tools. Then the deposit work hardens, in service, to about 375 Brinell without deformation. Its work-hardening characteristics eliminate the necessity for peening the deposit to obtain maximum wear-resistance.

For information on procedures for applying and for available sizes and prices, write for the booklet "HASTELLOY Alloy C—A Machinable Hard-Facing Alloy."

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HAYNES TRADE-MARK ALLOYS

HAYNES STELLITE COMPANY

A Division of Union Carbide and Carbon Corporation

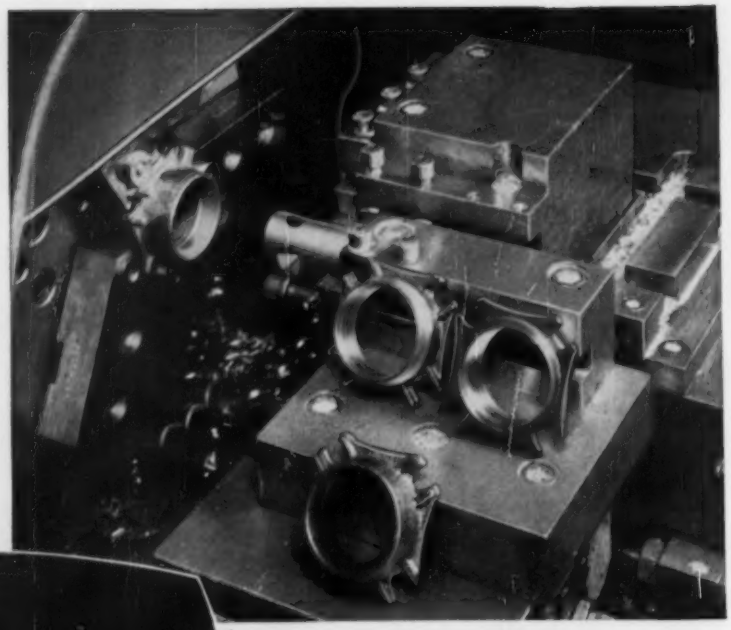
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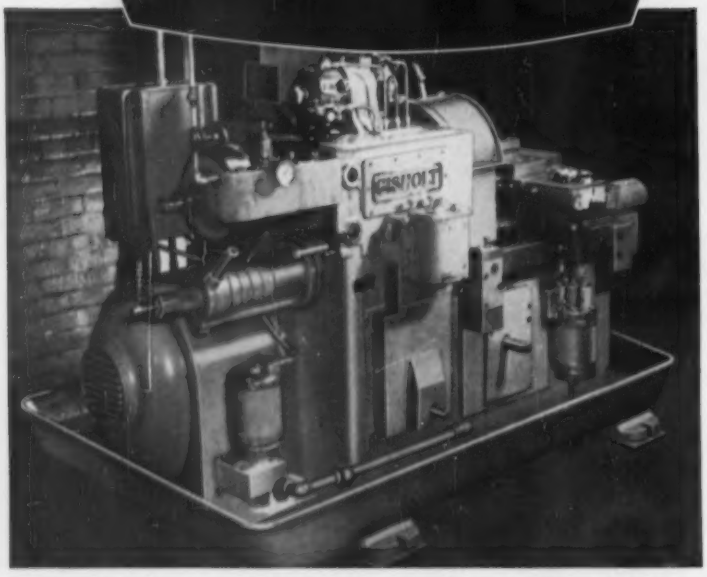
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Small Job Shop Catches the BIG IDEA



cuts costs with—

GISHOLT No. 12 HYDRAULIC AUTOMATIC LATHE



No matter whether the shop is large or small . . . if there's volume, there's the opportunity to make money faster with automatic machining.

The Kilbourn Engineering Company of Milwaukee saw it—and proved it again—subcontracting these parts for electric hot water heaters with the Gisholt No. 12 Hydraulic.

Greater Production

With its fast automatic cycle and multiple cutting, the Gisholt turns out these parts at twice the rate of the previous method. A man merely loads and unloads the machine. The owner is not limited to this one job either. It is easily set up to handle a variety of work up to 12″ in diameter.

Corner for Profit

Such work can be highly profitable for job shops. Especially when the whole operation can be tucked into one small corner of the shop as this one is.

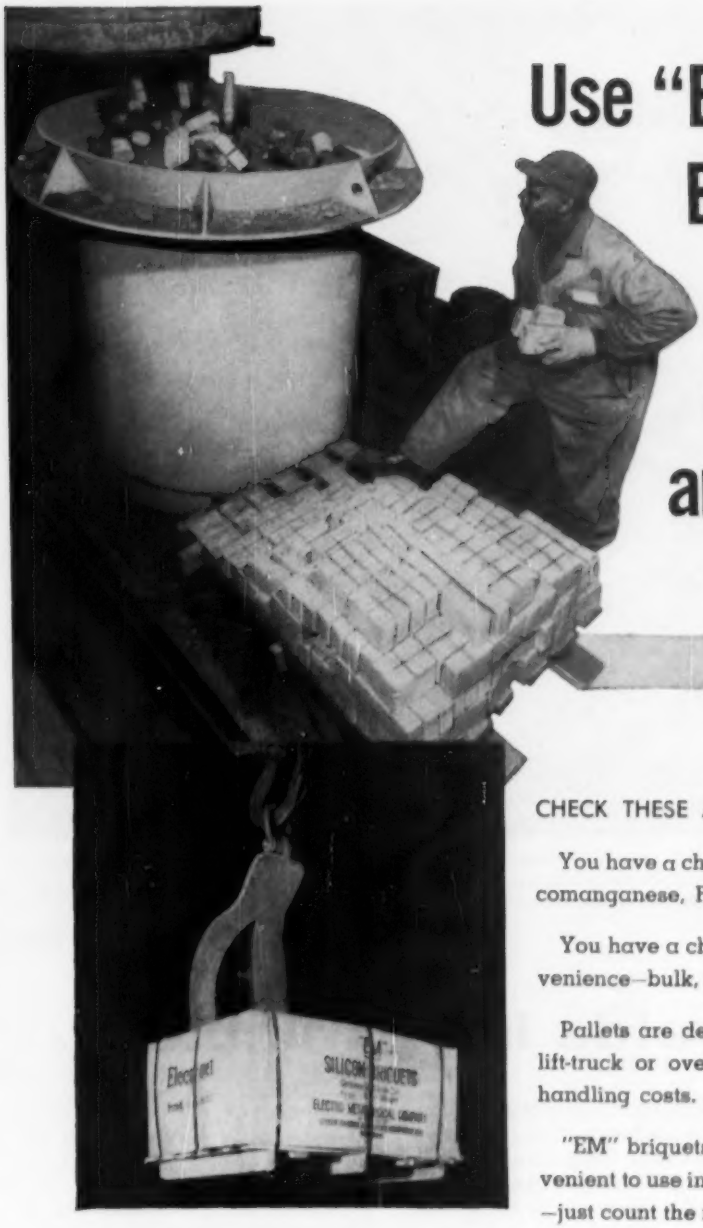
Progressive thinking like this is what makes many small shops grow into big ones. Gisholt engineers can help you with all kinds of ideas for making the most of machine tools.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

THE GISHOLT ROUND TABLE
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.



TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES



Use "EM" Ferro-Alloy Briquets for convenient charge make-up and easy handling

CHECK THESE ADVANTAGES

You have a choice of 5 kinds of "EM" briquets—Silicon, Silicomanganese, Ferromanganese, Chromium, and Zirconium.

You have a choice of 3 kinds of shipments to suit your convenience—bulk, packed on pallets, or packed in 250-lb. bags.

Pallets are designed for fast, easy, and safe handling by lift-truck or overhead crane. Pallet shipments reduce your handling costs.

"EM" briquets are easy to handle in the foundry and convenient to use in the cupola charge. No weighing is necessary—just count the number of briquets to obtain the weight needed for the charge.

"EM" briquets are scientifically designed for maximum alloy recovery in cupola melting.

For additional information write or phone the ELECTROMET *office nearest you.*

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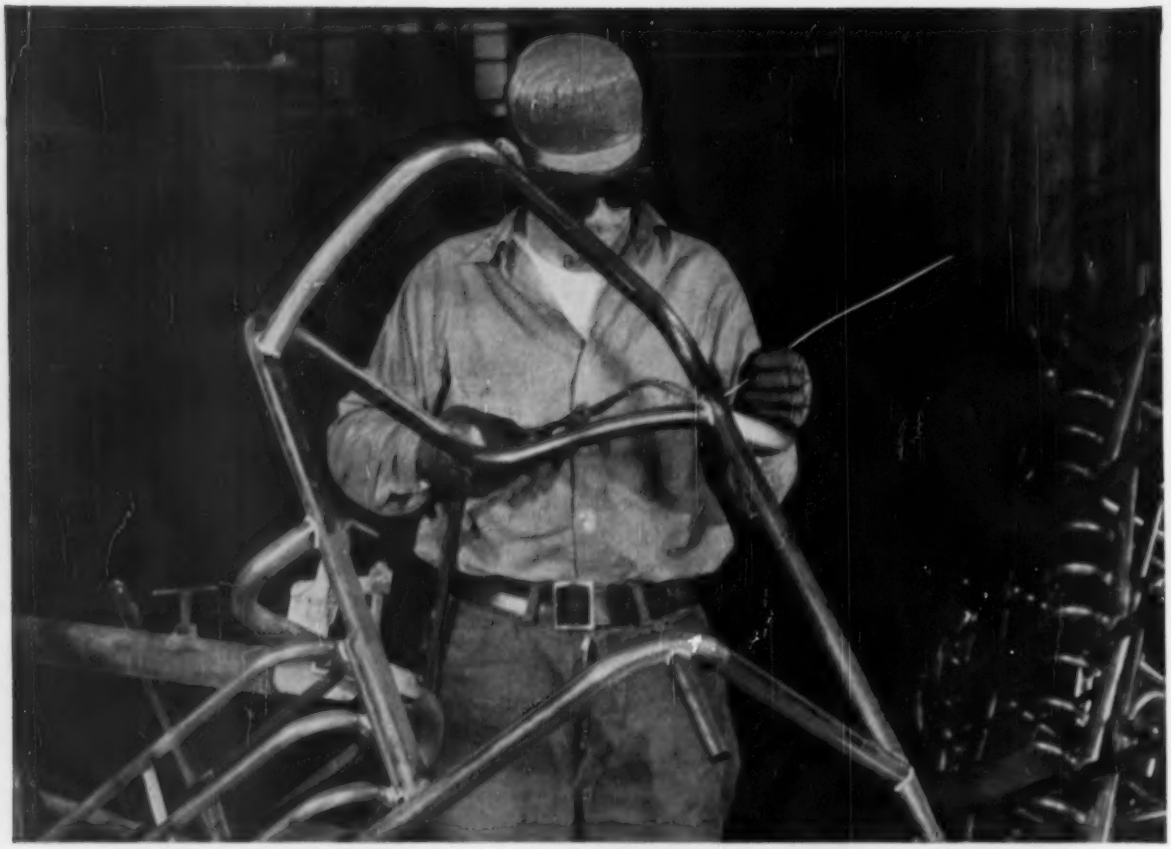
ELECTRO METALLURGICAL COMPANY

A Division of Union Carbide and Carbon Corporation
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Electromet
TRADE MARK
Ferro-Alloys and Metals



A revolving fixture holds this tubular steel chair-desk while the weldor brazes the joints with ANACONDA-997 (Low Fuming) Bronze Welding Rod. Heywood-Wakefield Company began producing welded steel tubing back in 1910. Today, they are leading manufacturers of tubular steel schoolroom furniture, bus, subway, railway car and theater seating.

here's production speed . . .

23 braze welds in 17 minutes



Here's the finished chair with seat, back rest and desk sections in place.

They know a lot about the techniques of production welding at Heywood-Wakefield Company, Gardner, Mass. Take the combination school chair-desk you see here. First it's tack-welded by semi-automatic resistance welding. Then it goes into a revolving fixture for braze welding with ANACONDA-997 (Low Fuming) Bronze Welding Rod and the flame-fluxed oxyacetylene process. The weldor swings the assembly to reach all joints from one position, completing the 23 welds in an average time of 17 minutes.

It's not only a fast job . . . it's a *good* job. The credit goes to Heywood-Wakefield engineers for their time-saving fixtures; to the weldor for his skill, and to the ANACONDA-997 rods he uses. Heywood-Wakefield prefers these rods because the finished welds are very strong, and they don't require special cleaning before painting. They're degreased, wire brushed . . . then painted. That's all.

ANACONDA-997 (Low Fuming) Bronze is a superior welding rod used to join copper alloys, cast iron, malleable iron and steel by the oxyacetylene process. It is also used for repair welding, and to deposit bearing surfaces on steel and iron. You can get other ANACONDA Copper Alloy Welding Rods for many different repair and production welding purposes. They're sold by distributors of welding equipment everywhere. Anaconda distributors are also a good source of practical advice on welding problems. Pratt & Inman Company, Worcester, Mass., general distributors, furnish Heywood-Wakefield Company with ANACONDA-997 Welding Rods. For more information about ANACONDA Welding Rods and recommended welding procedures, write for a copy of Publication B-13. Address *The American Brass Company, Waterbury 20, Conn.* In Canada: *Anaconda American Brass Ltd., New Toronto, Ontario.* 55122

ANACONDA®

WELDING RODS

FORECAST

The Iron Age Newsfront

Grain Size Affects Ultrasonic Testing

At least one type of improper heat treatment can be detected sonically, according to a recent engineering study. Sample grades tested were 1045, 4140, 410 and a wholly austenitic high alloy. Some steels with inherently large pearlitic grains contained in a network of ferrite may tend to exhibit sonic interference when the ratio of grain size to wavelength exceeds 14:1.

Spark Gap Tracer Developed

A new type tracer control for machining operations maintains a constant spark gap between the model and the tracer stylus. The stylus exerts no pressure on the model it traces. Control setup—with high response speed, large output signal and inherent flexibility—is said to give excellent duplication of intricate contours from fragile plaster or plastic models.

Auto Plants Soften Midwest Scrap

Booming auto plants have, strangely enough contributed to a softening of the scrap market in the Midwest. Amount of scrap generated by the big stamping plants has lengthened mill inventories and contributed to slumping prices of No. 1 blast furnace grades.

MVA Dams: 70 Years to Complete

A giant dam construction program being considered by Missouri Valley Authority will require 70 years to complete. Even the big earthmoving tools available today will be barely adequate to tackle such a job, according to earthmoving engineers.

Steel Labor: Bargaining Position Good

With industry earnings up and outlook good, steel labor is in the best bargaining position in years. Chances are United Steel Workers will press hard for a pay boost of at least 10¢ an hour. Outlook: Peaceful settlement with wage boost followed by price increase.

Discrimination: A Get-tough Policy

A "get-tough" policy toward government contractors who discriminate in hiring practices is being readied. Nondiscrimination clauses have been standard in government contracts for years, but there has been plenty of winking at the requirement—particularly if white employees protested. Closer policing of firms holding government contracts is planned. Blacklisting from future government orders is the club.

Production Testing: X-ray Spectrography

X-ray spectrography, most often considered a research technique, is now reported in production use as a quality control device for jet engine blades. The method, fast and accurate, provides production men with another nondestructive testing tool.

Abrasive Cuts Cost of Cleaning Diecastings

A new nonferrous metallic abrasive material used in combined tumble and airless blast cleaning of diecastings has cut cleaning costs and assured several production advantages at one plant. The more uniform surface obtained has substantially improved paint adherence.

Steel Scrap: Warehousing Considered

Commodity exchange steelmaking scrap is making its second appearance in Chicago on a new contract basis and with No. 1 industrial bundles added to the No. 1 and No. 2 heavy melting previously offered. Now a third new wrinkle is being considered. The steel scrap would be warehoused by a third party and the dealer could get a loan on the warehoused scrap, which would be offered on the commodity market.

Power Steering: Eases Operator Fatigue

Industrial truck makers are currently trying power steering in an effort to ease operator fatigue and improve efficiency. Mechanisms are modeled after types used on automobiles.

NEWSFRONT · NEWSFRONT · NEWSFRONT · NEWSFRONT · NEWSFRONT

FAMOUS FIRSTS IN THE IRON & STEEL INDUSTRY

THE CHAIN THAT STOPPED THE BRITISH NAVY



During the War for Independence, the iron industry expanded greatly because of the increased demand for cannons, cannon balls and other war materials. However, one of the most interesting and outstanding contributions towards the cause was a chain that stopped the British Navy from going up the Hudson River beyond the Fort at West Point.

In 1778, the Sterling Works, some 25 miles southwest of West Point, operated all their forges day and night to make a massive chain 1500 feet long. Each link was 2 feet long and weighed 100 pounds. This chain was carried to West Point, floated on logs and stretched across the Hudson, where it made a formidable barrier no British gun boat dared to cross.

BAKER'S MAGDOLITE, the original dead-burned dolomite makes an important contribution to steel producers. MAGDOLITE offers you more uniform ingots, and better furnace efficiency at lower refractory costs. BAKER'S MAGDOLITE is always 5 ways better: Composition, Preparation, Strength, Economy and Quality, so the next time you order dead-burned dolomite, specify BAKER'S MAGDOLITE.

4-55

ANOTHER FAMOUS FIRST

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The original dead-burned dolomite

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NEWS SECTION
SPECIAL REPORT

King Weather Blasts A-Bomb Schedule

Concern over radioactive fallout forces postponements . . . Delays prove frustrating for 1800 observers . . . Industry has over $1 million invested in materials and labor . . . Test value proved—By *Tom Campbell*

◆ NEVADA A-Bomb Testing Area . . . Operation Cue turned out last week to have been Operation Letdown for 1800 observers including 450 members of the press. After four postponements—two of them a relatively short time before the big A-Bomb was to have gone off—interest in the blast was waning and rumors were rampant.

Despite reports that atomic energy officials were overly cautious and scary of public opinion on fallout, it appeared that every precaution was being taken to prevent casualties or damage in nearby areas.

Planned for next week's issue is a report by Editor Tom Campbell on the extent of the damage wreaked by the A-bomb. It will tell how various installations stood up under the blast.

In fact, one postponement was believed to have been called to eliminate the definite possibility that fallout would have hit observers 40,000 feet from point zero, where the 40-kiloton bomb was to have been exploded with a force of about 40,000 tons of TNT. Weather was King of Decisions here.

The considerable number of industrialists who were observing, either as civilian defense people or as industrial advisers to damage effect projects, learned a cold and exasperating lesson about weather.

The observing area is 2 hours bus ride from headquarters at Las Vegas, so there was plenty of sleep lost, because of postponements.



EDITOR Tom Campbell expresses "Operation Let Down."

Blast was scheduled for 5:15 a.m. But buses left the local high school auditorium at 11:30 the night before—and after the bad news on two occasions, returned to downtown Las Vegas by eight a.m. Night temperatures at the Yucca Flats area ranged from 18° to 23°. This naturally caused a run on long underwear at local stores.

But the major and real positive slant on the Operation Cue was the cooperation of Government, industry and labor to make possible a test like this.

That we will suffer an A-Bomb attack at some future date appeared to most people at the event to be a foregone probability. It is believed that industry spent more than $1 million to prepare for the experiments. The five postponements, if figured in lost time, efforts, money, and inconvenience to those who came here to learn, was a tribute to the faith in the Atomic Energy Commission and the Federal Civilian Defense Administration.

But it was not necessary to see



DIM FUTURE: House and shell press stand at 4700 ft from ground zero, ready to undergo test blast that will determine damage range.

or measure the exact damage of the blast to know what to expect in case of an A-Bomb attack. AEC and FCDA people have estimated probable damage based on comprehensive experiments already performed.

Operation Cue is solid with practical projects. To name a few: industrial shelters, underground distribution system for gas close to ground zero, tool sheds, concrete and steel beams, and gas installation at 2750 ft from G.Z., houses, steel beams, complete electrical systems, communications tower, hydraulic shell press, standard broadcast tower, all at 4700 ft from G.Z.; similar projects at 5500 ft, 7800 ft, 10,500 ft and 15,000 ft.

Fallout Danger Is Real

Here is a gage of probable damage in the case of a bomb blast similar to the device used in Operation Cue: at zero to 3800 ft from ground zero, damage would be severe and labeled as an "A" zone of damage, 3800 to 6900 ft from G.Z., effect would still be severe enough to damage seriously most projects or make them unusable, from 6900 to 10,500 ft from G.Z., would be "C" zone damage, and from 10,500 to 13,000 ft from G.Z., damage would be non-existent or negligible.

While there has been a tendency in some circles to play down the danger of radiation fallout, it should be pointed out that most of the postponements last week involved danger from fallout.

The expected Operation Cue blast will be one of the biggest and forceful "Open Shots"—shots that are open to press and civilian observers.

Much more information on blast effects has been uncovered than is generally supposed. There are complex problems involved, but the simple explanation of a shock wave is that it may be considered as a wall of compressed air moving quickly. Its effect on buildings, equipment, and people is to envelop them with a force greater than normal atmospheric pressure. This action crushes and damages unless structures can withstand the differential between the blast pressure and the atmospheric pressure.

Studies are on foot to design material or buildings so that pressure can be equalized quickly, thus forestalling the "Push Over" effect. There is another damage

How should I plan protection?

You do not expect your plant to burn down but you take out insurance.

Maybe you don't expect an A-bomb attack but your insurance is in helping pay for and giving your support to AEC and FCDA work and programs. Here are a few other things you can do:

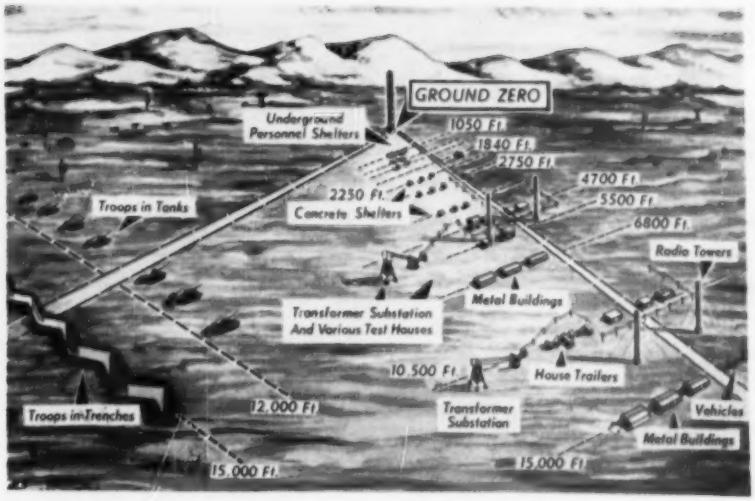
(1) Make A-bomb planning and information a part of your industrial relations setup—The same as safety and personnel.

(2) Contact AEC and FCDA regularly for latest information that has been released or declassified. This applies to safety and protection as well as peaceful uses for Atomic Research and Products.

(3) Take the attitude that an A-bomb attack is a probability and be guided accordingly.

(4) Study new design for materials to minimize blast effect. Research is progressing along lines of equalization of blast effects with atmospheric pressure.

(5) In planning expansion don't fail to take dispersion of plants into consideration. Maybe your next plant should be at a different location. Note Airforce is insisting that Aircraft Industry is too concentrated for ultimate safety.



ARTIST'S DRAWING shows dispersal of civilian and military items for atomic blast designed to show effects on many facilities.

factor known as the negative (suction) phase of the blast when pressure is less than atmospheric pressure. This means that the structure will be stressed outwardly and if flimsy will collapse. Fortunately, the negative or suction phase does not affect humans the same way it does structures.

The major point in Operation Cue is to cause industrialists and civilian defense people—as well as the public to be aware that we can have an A-Bomb attack and that there is something that can be done about it. It also brings home the fact that popular convictions are far more fantastic than conditions warrant.

There is protection from A-Bomb attacks in many areas, but it requires knowledge, cooperation, imagination, and guts.

For More Information . . .

▪ There is an erroneous view that most information on nuclear explosions is classified. A considerable amount of information is available to the general public. Still the best reference in this field is the basic handbook "The Effect of Atomic Weapons". For those whose responsibility includes civilian defense this book (available from the Supt. of Documents Gov. Printing Office, Washington, D. C. for $1.25) will prove valuable.

Seek Atomic Metals

Development of "new" metals for use in nuclear power reactors is vital to the progress of atomic power, a nuclear scientist of Sylvania Electric Products Inc. recently told a Diamond Jubilee meeting of the American Society of Mechanical Engineers in Baltimore.

Dr. Henry H. Hausner, engineering manager of the firm's Atomic Energy Div., told the group that studies are being made to find efficient and economical metals for nuclear reactor design. Four metals now playing the most important role in atomic power reactor operation, he said, are uranium, thorium, beryllium and zirconium.

The scientist emphasized that a major problem in reactor design are the enormous stresses caused by the intense heat of nuclear fission. These stresses can separate a cladding from the fuel element unless an efficient bond can be achieved. Improved bonds are being developed by metallurgists working on atomic reactor problems, he stated.

Dr. Hausner pointed out that powder metallurgy offers many advantages in fabrication of nuclear reactor components. For example, he said, by means of powder metallurgy, fabricators can change the grain structure of metals. This introduces into the structure a higher degree of disorder and makes the metal more resistant to radiation.

Plan Private Reactor

Industry is invited by Atomic Energy Commission to build and operate with private money an engineering test reactor to provide necessary irradiation capacity for nuclear experiments.

AEC expects to contract with the owner and operator of the reactor, which may cost between $10 million and $15 million, for use of a substantial amount or irradiation capacity over a 5-year period.

No Use Charge

Interested companies are asked to offer proposals by July 1. It is intended that construction begin not later than October and that the reactor be completed in time for operations to start by March 1957.

The agency will consider providing special nuclear material without use charge for the first 5 years and at AEC-approved charges thereafter. It will also consider leasing construction space at the national reactor testing station in Idaho.

Cut Isotope Prices

Researchers on biomedical, medical therapy, and agricultural projects will be able to buy radioisotopes at a new low price, beginning July 1.

Atomic Energy Commission will sell radioisotopes to these users at 20 pct of catalogue price. This is the same basis on which AEC now makes radioisotopes available for cancer research.

Users may apply to the Div. of Biology and Medicine, AEC, to get radioisotopes at discount rates. Those receiving the discount must agree to publish results of their research.

AEC says its decision to broaden its discount offer was made, in part, because there is not always a clear distinction between cancer research and basic studies in biology, biochemistry, and biophysics.

PRODUCTION

EARTHMOVING: New Monsters Coming

Roadbuilding equipment builders stressing power and mobility . . . Industry at seasonal peak in production and orders . . . Means more business for steel producers . . . New machines highly instrumented, more power.

◆ HEAVY roadbuilding equipment manufacturers are currently going all out in building better and more powerful earthmovers in a private horsepower race of their own.

In Cleveland General Motors' Euclid Div. is a new starter in the crawler tractor field with its first model. Initial production was started there on a twin-engine 58,000 lb 388-hp tractor.

In Peoria, Ill., Caterpillar, leader in the field of crawlers, is just getting mass production underway on its D-9, a 286-hp 56,000 lb model using an exhaust powered turbo charger for the first time on a tractor. The principle is similar to that on new turbo-compound aircraft engines.

In Springfield, Ill., Allis-Chalmers last month started production of its 44,000 lb HP-21 with 204-hp, which at the time was the most powerful single engine type.

A Big Market

International Harvester, third member of the Big Three in the field, is in production on a 180-hp crawler tractor and there are strong rumors of a major power increase in the offing. The move would be logical in such a highly competitive field and new units generally get at least a year's testing before introduction.

Besides the crawler tractors the horsepower race has extended to their working partners, the scrapers. The scrapers, often with a push from crawler tractors, take up to a 12 in. deep bite in solid ground. Equipped with side boards, they will load and carry almost 30 cu yds to the unloading site at high speeds.

Earthmoving equipment makers who constitute a $978 million annual industry are currently at the peak of their season. Almost all are on two shift operation. Generally the rush of order intake comes in January and February and then tapers off. This year the rush came at the usual time but more popular size of earthmovers are out to one to three months.

For the steel industry, monsters such as the new Euclid machine represent heavy tonnage since they weigh up to 30 tons, almost all steel. Much of it is in specialty types for exacting requirements. Caterpillar, for instance, furnishes specially designed rolls to steel producers to roll a heavy web structural for their own use. Samples of heats must also be furnished Caterpillar with each order. Since attrition of steel is high in earthmovers, they were among the first to use radioactive tracers to measure loss of metal in accelerated wear tests. Highly instrumented scrapers are followed along test plots by trucks loaded with instruments recording strains, wear, deflections, etc.

The availability of improved steels has contributed largely to a high power weight ratio permitting builders to pack more power and efficiency into their units.

Euclid's sales development manager, A. S. McClimon told the IRON AGE that its new unit was the forerunner of a whole new class of 300-hp crawler tractors weighing 58,000 lb or more. This is a rise from a 90-hp average in 1933 to 165 in 1953 and 200-hp this year. It is being accompanied by a rise in speed and power on earthmovers.

Earthmoving Outlook

POWER: Up to 1000 hp from turbocharged diesels; emphasis on gas turbines.

EQUIPMENT: Much larger units for massive construction projects of the future.

TECHNIQUES: Use of chemicals and vibrators for tamping, new ideas to slice earth.

DEFENSE: Development of versatile units light enough to be airborne.

MATERIALS: New alloys to improve fatigue and abrasion resistance.



ECONOMY: What Makes Boom So Big?

Business is heading for its best year ever . . . Economy set many new records during first quarter . . . Second quarter pace is even faster . . . Auto slowdown wouldn't stop the boom—By E. C. Kellogg.

◆ EVIDENCE is mounting that business is headed for its best year ever. Government experts have just finished giving the economy its regular first quarter checkup and the report is excellent.

Here's what's happening:

Retail Sales: Totaled $15 billion in March to round out the best first quarter on record.

Employment: Number of nonagricultural workers hit 48.7 million in March, up a quarter of a million from February. This was the largest increase since the recovery started, marked the first time since 1953 that a monthly employment figure topped year-ago levels.

Workweek: Increased another 18 minutes to 40.7 hours, compared with 39.5 hours in March, '54.

Construction: Outlay for nonfarm residential construction in first quarter was up 33 pct over same time last year. And industrial construction which fell off during 1954, is back up to 1953 levels. The government estimates new plant and equipment expenditures will be up 1 pct from '54, but with business optimism growing all the time the increase will be about tripled when final figures are tallied.

It's this greater than expected outlay by industry for capital goods that will help balance a possible slowdown in auto production pace. Another offsetting factor: consumer spending, already running at a record high $237.7 billion per year (compared with $230.5 billion at end of first quarter last year), will go even higher.

Personal Income: Here's one reason the current recovery is being pushed into a real boom. People have a lot of money and they're spending it. Personal income according to latest figures is at a $292.4 billion per year rate, can't miss going higher before summer.

Industrial Production: The key statistic for a lot of economists and businessmen, the Federal Reserve Board's Industrial Production Index is now at 135, up a startling 9 pct in the last 7 months.

Government Spending: Decline in this category, particularly in defense outlays, was a big factor in the recession. Defense spending, of course, isn't what it was when Korea was a hot spot, but the decline is over. Spending rate has leveled off. Outlook for the near future is that it may start rising again.

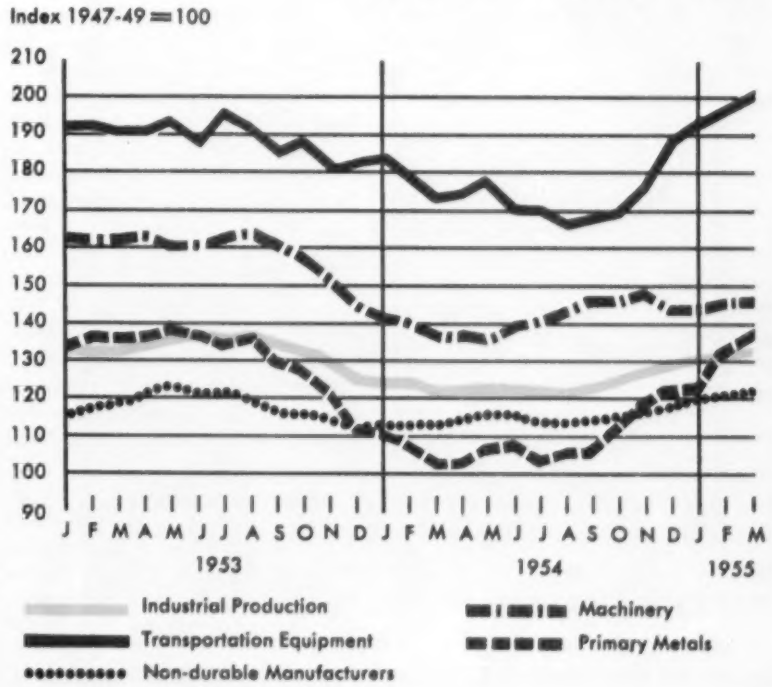
And if the President's $101 billion highway program ever gets freewheeling this will add a huge hunk to government expenditures that can't miss buoying all phases of industry.

Inventories: Bugaboo during the '54 recession, the inventory cutback definitely ended last September. Since then manufacturing and trade inventories have held around the $77.5 billion level. Increase in production is being used mainly to keep up with the rise in new orders.

New Orders: Up nearly 25 pct in the first few months of this year compared with same time last year. Main strength here is in durable goods industries.

It all adds up to one of the best first quarters we've ever had and current pace is even faster.

Durables Pace Recovery



FINANCIAL

STEEL: Earnings Hit The Ceiling

Producers eye present and future with rose-colored glasses . . . Expansion, prices and labor share spotlight with earnings . . . Good business predicted over balance of year . . . Exports up—*By J. B. Delaney.*

◆ STEEL expansion talk, prices, and labor shared top billing with record and near-record earnings as steel producers reported on the results of first quarter operations.

Here's the picture:

Earnings: Up nearly 60 pct from first quarter of 1954. Several producers, including U. S. Steel and Bethlehem, reported record first quarter profits.

Expansion: A new major round of expansion is just around the corner if operations this year average 85 pct or better, says E. T. Weir, chairman, National Steel Corp. (THE IRON AGE, March 24, '55, p. 51). Eugene Grace, chairman, Bethlehem Steel Co.: Bethlehem alone must add 8 million tons of new capacity in next 10 years if optimistic Government economic forecasts are correct. Adm. Ben Moreell, chairman, Jones & Laughlin Steel Corp.: J. & L. is boosting expansion and modernization spending for 1955-56 from $51 million to $136 million.

Wage Boost Expected

Prices: Mr. Weir said a steel price increase would be necessary this year even without a boost in steel wages. He said the industry has been absorbing generally rising costs. Other producers agree that prices will rise if wages go up. Last year's post-wage boost price increase of $3 per ton was conservative due to strongly-competitive conditions. The outlook now: there'll be a heftier increase this year.

Labor: United Steel Workers notified basic steel they want to negotiate on wages. Union will get together with major producers soon. The outlook: a wage increase of at least 10¢ an hr. Producers are non-committal, but talk of resistance to a pay hike is conspicuous by its absence this year as contrasted with last, when the USW ultimately walked off with a "Package" worth about 12¢ an hr. Only negotiable matter this time is hourly rates of pay. Observers expect a settlement to be wrapped up well before the June 30 deadline.

"Two years ago," said Mr. Weir, "I am sure everybody felt the industry had built ahead and that there would be no necessity to build on a major scale for possibly five years. But here we are in two years—running ahead.

"The industry today is facing the problem of further development and when we will have to do it. We will have to start it one of these days."

Backlogs Pace Shipments

Optimism was the keynote at quarterly press conferences. Mr. Grace, predicting capacity operations through July, said he was optimistic about everything. Mention of a possible slowdown in automotive, which is consuming about 25 pct of finished steel, seemed to scare no one. As mentioned earlier by THE IRON AGE, other consumers would take up all or most of an automotive lag. The Bethlehem chairman was optimistic over prospects of a peaceful settlement of auto union demands for a guaranteed wage and other concessions. (THE IRON AGE, April 28, '55, p. 55.)

Steel leaders attributed exceptional earnings of first quarter to (1) good operating management, (2) new and more efficient equipment, and (3) a good product mix, with demand strong for high profit items.

Steel order bookings continue to run ahead of shipments. Bethlehem booked an all-time first quarter high of 4,193,000 tons, compared with old record of 3,635,000 tons in first quarter of 1951. Bethlehem orders on hand at end of first quarter were 3,524,000 tons, compared with 2,417,000 tons at end of 1954. U. S. Steel's order backlog at March 31 was 6.3 million tons, compared with 3.9 million at last Dec. 31.

Export Outlook Good

The industry considers the export outlook good. A Bethlehem official predicted foreign demand for finished and semi-finished is good for two more years—at the same rate or better. Bethlehem export sales are running 8.6 pct of total volume compared with 5.1 pct in 1954. B. F. Fairless, ex-chairman, U. S. Steel, says steel exports this year will total 3.7 million tons against 3 million tons in the previous year.

Steel Company Earnings

	First Quarter 1955	First Quarter 1954
U. S. Steel	$72,700,000	$44,800,000
Bethlehem Steel	35,313,262	27,802,938
Republic	16,192,265	11,679,012
Jones & Laughlin	9,600,000	5,800,000
National	11,203,461	6,420,225
Youngstown Sheet & Tube	7,975,488	2,989,478
Inland	10,432,755	9,463,250
Colorado Fuel & Iron	2,929,894	771,456
Wheeling	2,982,273	1,135,388
Sharon	2,229,271	70,716
Crucible	2,248,896	529,928
Pittsburgh	909,741	(199,150) *
Granite City	2,284,104	638,786
Allegheny Ludlum	2,410,906	1,063,450
Northwestern		
Newport		
Lukens	101,758	631,116
Detroit	1,015,035	(237,980) *
Alan Wood	299,397	183,869
Copperweld	824,884	282,347
Lone Star		
Laclede		
Keystone	2,712,907	1,394,178
Rotary Electric	825,459	516,202
Continental	699,806	318,217
Eastern	521,555	511,729
Acme	1,541,723	644,963

( ) * Represents Net Loss.

SMELTERS: See Market Holding Firm

In spite of price fluctuations and some cutbacks in customer ordering, smelters are confident of good year . . . Consumer stocks on most metals are low . . . See 14 pct jump in lead use—By K. W. Bennett.

◆ OUTLOOK for the smelting industry is solid. Despite price fluctuations in the past 2 weeks, despite cutbacks in customer ordering in the past 2-3 weeks, scheduled expiration of current stockpiling program that affect two base metals after June—smelters are speaking confidently of high business levels through third quarter, probably for the remainder of the year.

Brass and bronze ingot shipments, after falling to 263,233 tons in 1954, pulled up sharply from the 1954 monthly average of 21,900 to hit a better than 25,000 tons per month average in the opening quarter of 1955.

When the monthly tonnage figure shot to 29,000 tons in March, there was some feeling that customers were overbuying. But last week, a sales chief for a smelting concern confided. "I've worked in this industry a long time. But I've never seen inventories as low as they are right now, this week. And I mean our own stocks of raw material and our consumers' stocks of finished ingot as well."

Aluminum Stocks Are Low

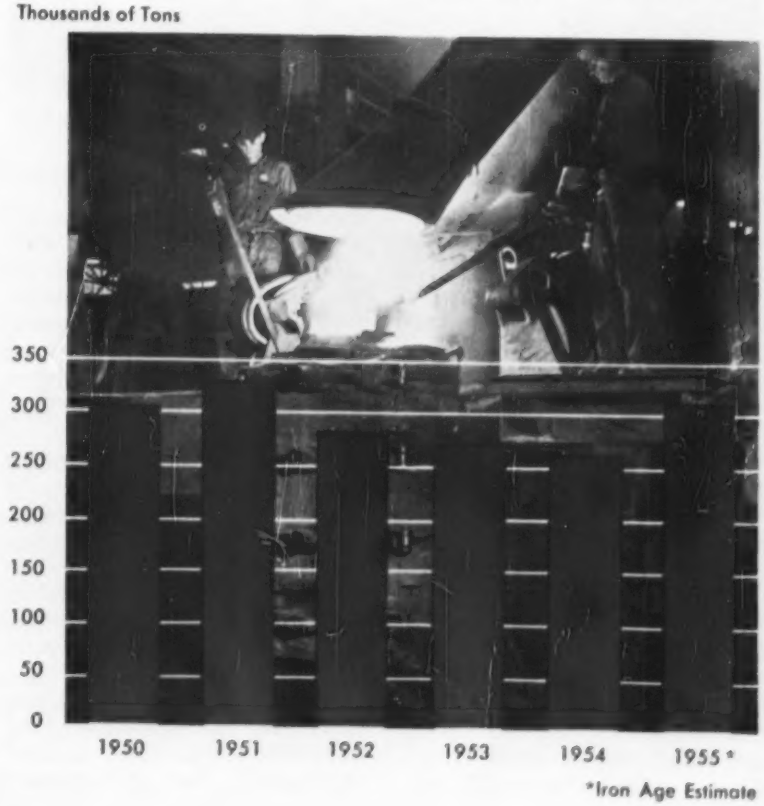
His appraisal of brass and bronze ingot output for 1955: A 25,000 ton per month average. The figure may seem optimistic, but is confirmed by other sources within the industry. That tonnage, amounting to a 300,000 ton annual total, would make 1955 the industry's best year since 1951, at least on a volume basis.

For aluminum: domestic secondary aluminum, representing about 16.5 pct of total output, is scheduled to hit a 32,500 tons per month shipment level by the end of 1955 compared with a 26,500 ton per month rate in the closing quarter of 1954. Reports from this branch of the smelting industry suggest that consumer stocks are low, and output of secondary ingot is currently at or near capacity with little indication thus far of a break. The recent price decline in ingot prices has prompted a slower buying policy on the part of some consumers, since scrap prices are declining and a further drop in ingot prices is regarded by some purchasers as a possibility. In most cases, however, like steel consumers, the buyer of aluminum ingot finds his stock too low to be able to wait and see.

Lead, after a cheerless 1954, is currently being consumed at an estimated 110,000 lb per month, including government stockpiling, and is regarded as a strong possibility for further price increases. U. S. lead consumption is predicted for a gain of as much as 14 pct in 1955 over 1954, according to Vice-president S. D. Strauss of American Smelting & Refining Co., while imports of foreign lead and lead concentrates are expected to decline sharply this year.

Producers' refined lead stocks are down from 100,000 tons in 1954 to about 45,000 tons in 1955.

Brass, Bronze Ingot Shipments

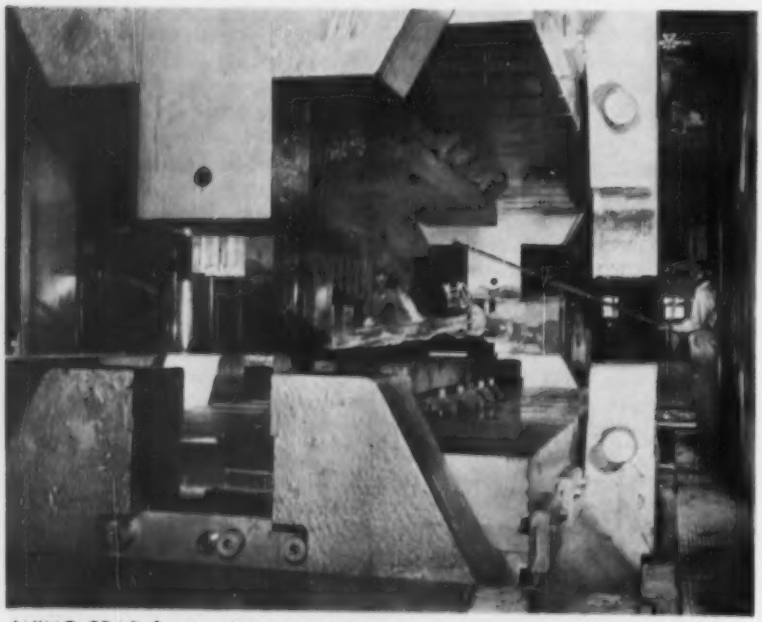


*Iron Age Estimate

PLANNING

HEAVY PRESSES: Air Force Program Rolls

Alcoa completes first installation . . . One 50,000-ton unit is biggest to date . . . Program will result in big cost and weight saving for aircraft industry . . . Reds had head start—*By T. M. Rohan.*



WING SPAR forging is removed from the press immediately after the first "blocking" or forging squeeze has been performed.

◆ AFTER WEATHERING 5 years of research, engineering, political fireworks, monumental fabricating and construction jobs and a Korean war, the $280 million Air Force heavy press program this week is getting down to work in earnest.

At the Cleveland Works of Aluminum Co. of America, the program's first completed installation of a 50,000 ton forging press (biggest to date) and a companion 35,000 ton unit were started with lavish ceremonies.

Wyman-Gordon at North Grafton, Mass. dedicated its first 35,000 ton unit last month with a 50,000 ton job scheduled for completion in Fall.

Completion of the $15.6 million Alcoa forging machinery and extrusion presses elsewhere marks a transition from design to operating phases of the program. Air Force officials now plan to concentrate for the present on accumulation of operating know-how and new design developments rather than development of new type presses.

Air Force experts today can only guess what equipment the Iron Curtain countries are developing. It is certain they have had a long head start since they assimilated most German development after World War II, which then led the world by a wide margin.

The original $410 million heavy press program recommended by the 1950 Munitions Board included 12 forging and 13 extrusion presses including 75,000 ton forging and 20,000 ton extrusion types. This was whittled down to 17 presses: 8 forging presses including two 50,000 ton units, four of 35,000 tons and two of 25,000 tons. In extrusion models it included two 20,000 tons and four 8,000 tons. Contracts were let to Mesta, United, Loewy, Bliss, Baldwin-Lima-Hamilton and Lombard Engineering in a design free-for-all to develop the best type.

Program Cut

In 1953 a cost-conscious administration cut the program to four forging presses including two each of 50,000 and 35,000 tons capacity and six extrusion presses with three each of 12,000 and 8,000 ton capacity. The last of the presses to go in, a 12,000 ton Lombard extrusion type for Harvey Machine Co. at Torrance, Calif. has been completed and will be installed in California by fall and operating by year's end. A 25,000 ton Bliss press will be completed and mothballed at Kaiser Aluminum at Newark, Ohio.

For aircraft builders the heavyweight presses open new horizons in more strength, less weight, faster production, less parts, less machining, less metal required, new design opportunities and lower cost.

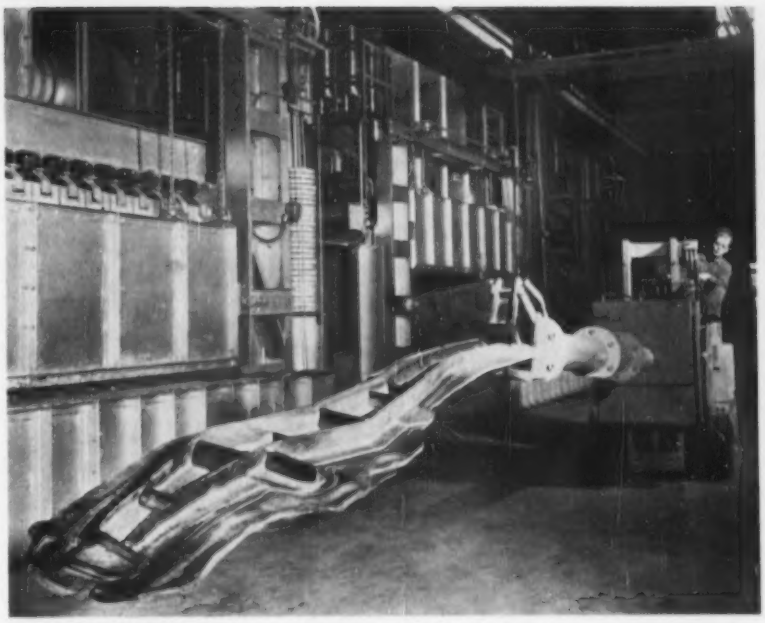
Any one is a blessing in their constant tussle with the strength-weight ratio but combined they give designers a new lease on life. Because of lead times of up to two years, some planes have been designed in duplicate, one for conventional methods and one in anticipation of using the heavy presses.

The first and major use of the presses will be in wing spars

where supersonic speeds have caused enormous loadings on thinner and thinner wings. These are made by complex machining operations or by hot and cold forming.

Air Force people confidently expect to save 5-10 pct on the price tag for a bomber and also cut weight by 5-8 pct. Within 5 years they expect a 35 pct cut in the cost of machining parts and a 25 pct cut in joining and fabricating.

On aircraft wing spars alone a 1600 lb forging costing $18,000 has conventionally been used and machined down to size. With the new presses the forging size is cut to 321 lb at a saving of 1200 lb of material, cost is cut drastically. At least 272 parts are being eliminated plus 3200 rivets per plane and the whole assembly is cut by 100 lb. Fighters now take four times as long to build as in World War II so production time saved is all-important.



AIRCRAFT WING SPAR takes a trip from the pre-heat oven to the press for further forging. New press cuts production costs drastically.

Leased by Air Force

Following the wing spars, other parts envisioned for the presses are propellers, jet and piston engine parts, cargo floor bulkheads, cockpit floor beams, landing gear supports, fire walls, engine mounts, landing gear wheels, struts and trunnions, wing bulkheads and jet compressor wheels.

Forging presses are leased by the Air Force to the operators at a rate of 4 pct of net sales while extrusion presses are to be leased at 5 pct. The $281 million overall cost of the program to the Air Force includes the presses, facilities and supporting costs, such as transportation and industry expansion.

To supplement the presses, the Air Force is installing all support equipment needed to process the raw material from billets to finished forgings and extrusions. This includes all equipment to manufacture dies for the presses. In each case, the company which is to operate the heavy press facility has an existing plant of its own at the Air Force location. These are usually forging or extrusion plants.

Engineering and construction problems involved in building the presses for versatility, reliability, efficiency and a minimum of service and maintenance were staggering. After that came transportation limitations.

Construction Farmed Out

Special railroad cars were specially built at a cost of $880,000 to handle single castings weighing as much as 250 tons. Bethlehem Steel had to elongate heating furnaces to handle components. An ordnance shop was reactivated to turn out some parts. Special welding equipment was designed and built.

Construction continued during the Korean War but castings had to be farmed out to Japan, England, Scotland and Italy.

Here's How Heavy Press Program Shapes Up

Forging Presses

OPERATOR	LOCATION	SIZE	BUILDER	COMPLETION DATE
Alcoa	Cleveland	50,000 ton	Mesta	May, 1955
Alcoa	Cleveland	35,000 ton	United	May, 1955
Wyman-Gordon	N. Grafton, Mass.	35,000 ton	Loewy	March, 1955
Wyman-Gordon	N. Grafton, Mass.	50,000 ton	Loewy	August, 1955

50,000 ton Bliss unit to be stored unassembled at Kaiser Aluminum, Newark, Ohio
70,000 ton unit being designed, scheduled for evaluation

Extrusion Presses

Alcoa	Lafayette, Ind.	24,000 ton	Schloemann	Operating 1 year
Kaiser (2 units)	Halethorpe, Md.	8,000 ton	Loewy	October, 1955
Harvey	Torrance, Calif.	12,000 ton	Lombard	October, 1955
Harvey	Torrance, Calif.	8,000 ton	Loewy	October, 1955
Curtiss-Wright	Buffalo, N. Y.	12,000 ton	Loewy	July, 1955

MANAGEMENT

ENGINEERS: How To Treat 'Em

Engineering groups give tips on how to handle young graduates . . . A six-step program is recommended . . . Survey shows 50 pct of plants have training programs.

Are you behind the times in the care and feeding of engineers?

If so, the National Society of Professional Engineers and the Professional Engineers Conference Board for Industry has come up with some recommendations on the basis of a recently completed survey of what industry is doing in the training of its engineers.

The survey covered more than 200 companies ranging in size from a six-man consulting engineer's office to a large corporation employing thousands of engineers. More than 50 pct of the replies were from manufacturing firms; others were from public utilities, government agencies, and research organizations.

Here are the recommendations:

- Increased attention to supervision and guidance for the young engineer, not only during his orientation period but for several years beyond.
- More opportunities for advanced studies should be made available, not only in fields relating specifically to the young engineer's job but also in areas that will help him develop into a well-rounded, educated person as well as a competent technician.
- Greater cooperation among industrial plants, schools, professional societies and community groups to make available to small companies facilities now enjoyed by the large.
- Greater interchange of information among employers about training methods and techniques.
- Stimulation of engineer's interest in community and cultural affairs.
- Further encouragement of professional registration and participation in professional society activities.

Three Basic Types

Fifty pct of the plants surveyed have training programs for engineers. The figure is 85 pct for firms employing over 100 engineers. Ninety-two pct found that a program of orientation and indoctrination for newly employed engineers was essential. Thirty-one pct of the large firms permit engineers to take courses on company time.

Three basic types of training are indicated: indoctrination, professional growth, and management development. Training philosophy falls into three categories: the "specialized groups" approach as in a carefully planned program, the "on their own" approach where the engineer is on his own in absorbing facts of company operations, and a middle course embracing a mixture of on-the-job training and tuition-paid courses.

Steel:

Industry needs executive depth for future planning.

The search for management talent in the steel industry is unceasing, according to Alfred E. Kadell, senior vice-president of the Great Lakes Steel Corp. Addressing a meeting of the Association of Iron and Steel Engineers at the spring conference in Detroit, Mr. Kadell said the steel industry offers unusual opportunity in varied fields of management.

Management talent is needed, he said, "not only to get today's job done better but also to supply organizational depth to provide for expansion and to build continuity in performance for the future."

Commenting on the automobile industry's record breaking activity, Mr. Kadell said that he was reminded of the steel industry's growth and expansion in the 1920's. "Then," he said, "a finishing mill producing 15,000 tons of full-finished sheets in a month was considered a very large operation. Today, we have many cold mills producing up to almost ten times that much in cold-roll in a month."

Mr. Kadell said this growth has created many difficult problems for heavy industry such as steel and has radically changed the procedures used in the management of such industries. These new procedures call for specialists in such fields as labor relations, industrial engineering, safety, public relations, product control, clerical and construction staffs.

"Management is not a permanent thing," Mr. Kadell said. "In addition to the requirements of expansion, replacement needs are always impending due to losses through illness, old age and death."

Fairless Retires

Benjamin F. Fairless has resigned as chairman of the board of U. S. Steel Corp. Announcement was made at the annual stockholders' meeting on the eve of his 65th birthday.

Mr. Fairless will continue as a director of the company and a member of the finance committee. He served as chairman of the board from May 6, 1952, when he succeeded Irving S. Olds. He was president of the company from 1938 until his elevation to board chairman.



"Seldom ever drive it."

Stockpile:

Target figures call for more buying of many metals.

Latest figures compiled by General Services Administration show that in terms of tonnages the government programs for buying stated quantities of scarce minerals from domestic sources have a long way to go.

For example, the chrome-buying program was started in August 1951 with purchase of 200,000 long tons of ores and concentrates authorized. At the most recent count, 82,402 tons had been delivered.

The program for buying tungsten, which also began in 1951, is little more than half finished. Of an approved purchase of 3 million short ton units, 1.67 million units have been delivered.

Mica Buying Lags

Manganese deliveries of 37 million long ton units are authorized. Thus far, the government has accepted 11.87 million tons of manganese.

Three types of mica are being bought under a program calling for 25,000 short tons of hand-cobbed mica or the equivalent. Deliveries of 5503 tons have been recorded.

Under the program for buying beryl, 626 short tons of an authorized total of 1500 tons have been delivered.

Purchase of 1500 short tons of crude No. 1 and No. 2 asbestos is slightly more than half complete. Accepted so far are 847 tons.

The columbium-tantalum program permits acceptance of 15 million lb of foreign and domestic ores and concentrates. Deliveries amount to 9 million lb.

Target Counts Misses

New Air Force "drone" targets are estimated to cost the government about $300,000 apiece, but quantity production eventually will pull the cost down.

A "proximity scorer" mounted on the flying targets registers how close or how far the target was missed. Direct hits on the target are not necessary to assess the accuracy of the marksmen.

The Air Force doesn't get much mileage out of the new aerial targets, however. They are retrievable only to the extent of four trips. Each carries a parachute and a hydraulic system in the nose that eases the jolt on the engine when it lands and buries itself in the ground.

Procurement of aerial targets in the new fiscal year is slated to remain under the $2 million mark, as compared with about $9 million worth in the current fiscal year.

Plan Arctic Ship

High-tensile steel is to be used in a protective belt that will reach entirely around a new type of Arctic ship designed for the Military Sea Transportation Service.

Maritime Administration invites private shipyards to bid on construction of this special vessel, called a cargo ship (dock). Bids will be opened by the agency on July 22.

An unusual feature of the ship is to be its capability of launching or retrieving landing craft through a gate in the stern. It will also be equipped to put into action tracked landing vehicles and sleds.

All controls on the 465-ft vessel are to be built for cold-weather handling. Planned speed of the ship is 15 knots; its cruising radius is to be 10,000 miles.



"Just before the trial this lawyer came to my cell, see? Well I thought he was my lawyer . . ."

DEFENSE

Scrap:

Hear ports build supply for shipment to Reds.

The Senate Armed Services Committee will probe reports that large amounts of ferrous scrap are being collected for shipment to friendly foreign countries and eventual transshipment behind the Iron Curtain.

Sen. Olin D. Johnston, D., S. C., says he has received letters complaining that "large stockpiles" of scrap iron are being assembled in various port cities throughout the United States for shipment to foreign countries and it is suspected the scrap is being sent eventually into Communist hands. He especially mentions scrap shipments from Charleston, S. C., to England.

Complaining that scrap iron shipped to Japan before World War II was "thrown back at us at Pearl Harbor," the senator asserts that "anyone can make a mistake once, but only a fool makes the same mistake twice."

Contracts Reported

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Constant speed drives, 535, $3,814,265, Sundstrand Machine Tool Co., Rockford, Ill.

Power supply system, 755, $2,193,468, Hughes Tool Co., Culver City, Calif.

Converters, gyroscopes, 832, $1,449,431, Engineering Prod. Div., Radio Corp. of America, Camden, N. J., *H. M. Zimmerman.*

Transmitter compensator ass'y., 6891, $1,754,382, The Sperry Corp., Great Neck, N. Y., *George A. Dennis.*

Fuel tanks, 574, $2,600,050, Royal Jet, Inc., Alhambra, Calif.

Bomb sights, $2,339,659, General Motors Corp., AC Spark Plug Div., Flint, Mich., *L. R. Steffen.*

Tractor, aircraft, towing, 57, $2,596,612, General Motors Corp., Euclid Div., Cleveland, *R. C. Miller.*

Equipment for production of engines, $4,443,940, Ford Motor Co., Chicago, Ill.

Gun-bomb-rocket sights, 95, $1,096,500, Burroughs Corp., Detroit, Mich.

B-57E airplanes, $10,000,000, The Glenn L. Martin Co., Baltimore, *P. T. Russi.*

Indicators, spare, $1,965,861, Bendix Aviation Corp., Teterboro, N. J., *F. A. Battel.*

Extrusion tools, $1,137,060, Loewy Construction Co., Inc., New York.

Steel plates, 1540114 lbs, $329,987, Lukens Steel Co., Coatesville, Pa.

Grinder, 20, $294,680, Moore Special Tool Co., Inc., Bridgeport, Conn.

Tractors, warehouse, 386, $902,313, Northwestern Motor Co., Eau Claire, Wis.

EXPANSION IN INDUSTRY

Research:

National Carbon to manage new Ohio facility.

Construction of new research laboratories by Union Carbide & Carbon Corp. is underway at Parma, Ohio. Estimated cost of the 175,000 sq ft, one-story structure is several million dollars.

The main laboratory building on the 66-acre site is designed around 6 rectangular units each of which contains 20 smaller units in two groups of 10 each. It will be managed by National Carbon Co.

Supplementary units include chemical engineering and laboratory furnace areas, a machine shop, boiler and compressor room and offices.

Aid Electronics

Research activity will include work with metallic and non-metallic compounds of carbon as well as with analogous compounds such as inter-metallics and semi-conductors. Research will be directed toward specific end-products only so far as these have their origins in the discovery of new material-process applications.

Among possible developments to come from laboratory studies are materials for new and improved transistors and related electronic devices.

Rail Link:

New spur planned for billion ton Canada ore deposit.

Construction is scheduled for mid-June on a new 42.7 mile rail link between Lake Wabush, Nfld. and Mile 224 of the Iron Ore Co. of Canada's Quebec North Shore & Laborador Railway.

The new line is a wholly-owned subsidiary of Canadian Javelin Ltd. which owns a billion-ton high-grade commercial iron ore deposit at Lake Wabush. The company is presently negotiating for 3 diesel engines and 130 hundred-ton ore gondolas for use on the new spur. A 3 million ton ore shipment from the deposit every 6 mos. is scheduled for 1957.

The 365-mile North Shore line was completed recently at a reported cost of $200 million. It serves Iron Ore Co.'s Labrador properties.

Canadian ore experts estimate the Wabush deposits probably contain as many tons as originally found in the Mesabi Range.

Latest reports on development work at the new site state the deposit contains 368,257,000 measured tons and 694,618,000 indicated tons of ore which will concentrate at 60.3 pct to 64.2 Fe (Nat.).

Plan Va. Facility

Reynolds Metal Co. will construct a $3 million aluminum extrusion plant on its Bellwood property near Richmond, Va.

Construction will begin early this summer and the unit will be in operation by the first of next year.

Aluminum extruded shapes will be produced from two presses to be installed in the plant for the architectural, construction and transportation industries. Aluminum billets for use by the plant will be shipped from the company's new reduction plant in Arkansas.

The new facility will supply the eastern market. The firm has extrusion plants in Arizona, Michigan and Kentucky.

Pipe Mill Rolling

Consolidated Western Steel Div. of U. S. Steel Corp. has opened its large-diameter pipe mill at Provo, Utah.

The 175,000 sq ft plant, next to the firm's Geneva Works, will turn out electric weld pipe 20- to 36-in. in diameter.

First rolling, 26-in. pipe, goes to Pacific Northwest Pipeline Corp. for gas transmission lines.

Install Foil Mills

Aluminum Co. of America has installed new 72-in., 4-high foil mills at the Aloca, Tenn., plant.

The new facilities can produce foil 60-in. wide for pack rolled foil and 60¾-in. wide for single rolled foil.

The mills have completed their shakedown run and are on production schedule.

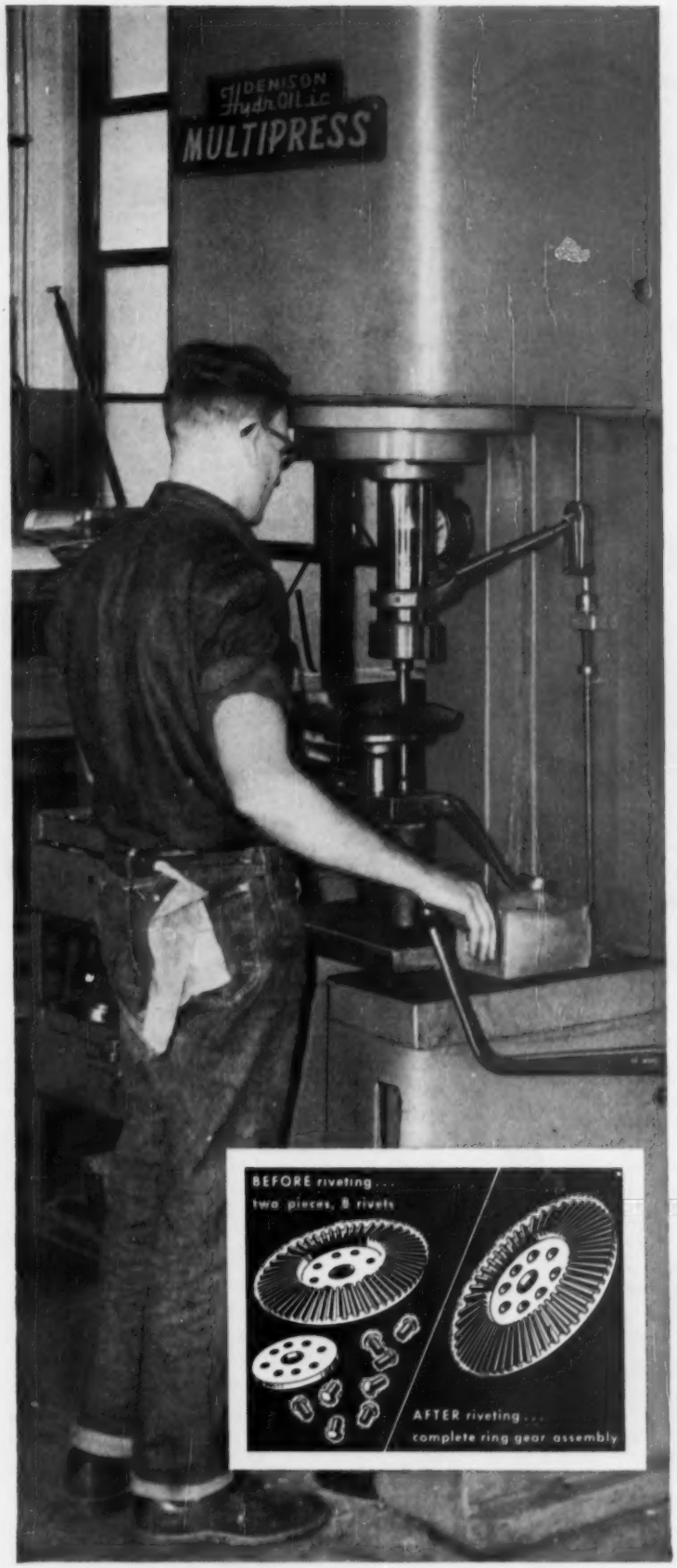
Among uses for the thin-rolled aluminum are packaging material, vapor barrier for insulation, in capacitors for the electrical industry and as a metallic yarn for the textile industry.

Fabricated Structural Steel

Contracts, Shipments, Backlog for March, 1955

	1955	1954	Estimated Net Tons Avg. 1947-50
CONTRACTS CLOSED			
March	285,434	193,509	221,387
Year to Date	760,692	637,863	535,549
SHIPMENTS			
March	227,789	285,365	191,297
Year to Date	667,002	784,113	519,377
BACKLOG	1,391,756	1,645,452	1,199,049

Source: American Institute of Steel Construction



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At Barber-Greene Company, they've tripled production for riveting together two halves of a ring gear assembly.

With former hot rivet method, the best a three-man team could do was 10 assemblies an hour. The operation was slow, noisy. Distortion from heat made a boring operation necessary.

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ALLIS-CHALMERS
22-Million-Volt
BETATRON



Reduce Product Costs. By eliminating the factor of over-design, a betatron helped one manufacturer. The result was a product far less costly to manufacture. Weight reductions made it easier to install, too.

Save on Raw Material. In less than six months a betatron paid for itself through raw material savings. One example: A simple two-piece welded part could replace a complicated casting because the speed and depth of penetration of a betatron permitted thorough inspection of the weld.

Convert Rejects Into Usable Products. Here's how a betatron helped another manufacturer: by helping to locate flaws exactly, many rejects could be repaired instead of discarded. In addition, by discovering flaws before machining, betatrons can save machine time and man-hours that might otherwise be wasted.

Put Realism Into Guarantees. When every component is proved sound by a betatron, many of the breakdowns that require servicemen's time or expensive replacement will be completely eliminated.

WITH THESE KINDS OF SAVINGS, it is no wonder that many management and operating men are getting information about Allis-Chalmers new inspection tool, the 22-million-volt betatron. It lets you inspect castings or forgings for hidden flaws or alignment of parts quickly and efficiently. It detects flaws only .040 inch deep in a steel section 8 inches thick. Cracks only .002 inch wide are readily detectable.

Get complete information. Consult the A-C office nearest you or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4548

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

Report To Management

A Peaceful Wage Settlement for Steel

There is scarcely any threat of a strike as steel companies and the United Steelworkers sit down to negotiate another wage agreement. The flow of steel products to booming U. S. plants and industries will be uninterrupted by labor troubles.

Both sides agree that this is no time for a strike. There's a lot of feeling, and a growing feeling at that, that a strike is an old fashioned way of accomplishing labor settlements. Besides, the issues, limited strictly to wages, are not likely to run into a deadlock.

David McDonald, president of the Steelworkers, has gone a long way to cooperate in stabilizing steel labor. He has clamped down on wildcat strikes, stated publicly that labor has the responsibility of helping assure a prosperous industry.

On the other hand, the steel industry now has the unwritten policy of believing that its workers are entitled to benefits equal to those of workers in other industries.

A package of about 10¢ per hour is likely to be the result. This will be followed by a price rise in steel.

The Increase Will Be Bigger

The price hike will be somewhat larger proportionately than the average of $3 per ton that followed the last wage increase of about 12¢.

Steel executives are not inclined to absorb the wage increase. In fact rices would rise even without a pay hike. Steelmen have absorbed other increases in operating costs and are committed to greater earnings for stockholders.

Contract for the auto industry, now locked in a guaranteed annual wage struggle, comes up a month before steel's. Effect of auto negotiations can't help but be felt in steel, even though steel is limited to wages while the auto issues cover the board.

A pattern in the auto industry would probably be followed to some extent in steel. Conversely, a steel settlement before the auto issues are decided could help smooth out some of the rough spots there.

Auto Records May Fall

If the rest of the economy can believe what it hears from Detroit, the automotive boom will do little more than pause for new model refreshment this year. Some seasonal slack will have to be taken up, but that's about all.

Usually right, GM's Harlow H. Curtice now believes the domestic market can absorb a full 7.5 million cars and trucks. This will top the 1950 all-time high of 7.46 million when the abnormal forces of the Korean War created auto buyers in record numbers.

Many top steelmen have given up trying to second guess the Detroit forecasters. Past records show the automakers have an uncanny knack for estimating the market.

But keep an eye on credit terms for auto buying. Some of the terms offered by dealers approach the fantastic point. It's possible in Detroit to arrange new car financing that can extend payment time out as far as 3 years, with a little juggling, of course. No money down is another come-on. If there is a danger to come from the automaking boom, it may be that.

It's Daylight Saving Time

If your operations extend across time zones, and it's hard to find a business that doesn't, make sure your clocks are synchronized.

Not all communities move their clocks ahead. It's worthwhile to make sure someone in your organization knows which do.

INDUSTRIAL BRIEFS

Rural Study . . . Aluminum Co. of America is forming the Alcoa Agricultural Section to handle increasing volume of agricultural research, engineering and development. Section will also study use of aluminum for farm machinery, building, storage and irrigation systems.

Coke for Britain . . . Licensees of Wilputte Coke Oven Div., Allied Chemical & Dye Corp. have received an order for the third battery of Wilputte ovens to be ordered by the South Durham Steel and Iron Co., Ltd., England. Licensees are Gibbons Brothers, Dudley, England.

Power for Japan . . . First of three 350,000 lb, 75,000-kw generators being built by Westinghouse for Japanese power development was loaded at the Philadelphia Navy Base. The unit, one of the largest ever handled by the port, is a portion of more than $26 million in power equipment ordered by Japanese utilities.

New Name . . . Shareowners of the American Locomotive Co. have voted to change the name of the 54-year-old company to ALCO Products, Inc. Name change is in line with the company's intention of broadening product lines.

Scholarships . . . Seven engineering students have been given scholarship awards by the Mesta Machine Co. They are awarded annually to outstanding freshman engineering students and renewed automatically each year.

ASTE Grows . . . Presentation of charters to chapters in Keene, N. H., and Oklahoma City has brought the membership of the American Society of Tool Engineers to 31,000.

Diesel Power Package . . . First diesel - electric packaged power plant for the oil drilling industry has been shipped from the Schenectady plant of Alco Products, Inc. It was also the first product delivered under Alco's new name. It was built for the Bateman Drilling Co. of New Orleans.

Service Facilities . . . Fairbanks, Morse & Co. opened new sales and service headquarters at Fair Lawn, N. J., to serve a 7-state area including Connecticut, New York, New Jersey, Eastern Pennsylvania, Maryland, Delaware and Virginia. Company's Export Div. sales offices are also located in the new headquarters building.

Joint Company . . . United States Air Conditioning Corp. and Sterling Radiator Co. have formed Sterlairco Inc., jointly owned by U. S. Air Conditioning and Sterling's Heat Specialties Div. The new company, with offices and factory in Westfield, Mass., will take over manufacturing, sales and distribution of gas-fired unit heaters.

New Company . . . Southern Can Co. has been organized by Birmingham, Ala., business men to manufacture tin cans for food, oil, chemicals, paint and beverage industries. Building is completed and equipment installation will begin as soon as it is assembled.

Subsidiary Re-named . . . Rockwell Manufacturing Co. has changed the name of its Canadian subsidiary, Callander Foundry and Manufacturing Co., Ltd., Guelph, Ont., to Rockwell Manufacturing Co. of Canada, Ltd. The firm is Canada's largest producer of power tools for home and industry.

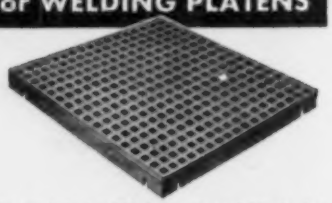
Plant For Sale . . . Thor Corp. has authorized sale of the company's Cicero, Ill., plant including real estate, buildings, machinery and equipment. Thor, which will continue to operate its plant at Bloomington, Ill., signed a contract with Avco Manufacturing Co. for manufacture of Thor's new automatic washers.

Change Designation . . . American Thermometer Div. of Robertshaw-Fulton Controls Co. has been re-designated the American Controls Div. The new name will identify the division more closely with its products, automatic control devices for home and industry.

More Stampings . . . A new stamping plant for Richard Brothers Div. of Allied Products Corp. has been completed at Eaton Rapids, Mich. It will be operated in conjunction with the division's die shops in Detroit and Hillsdale. It will specialize in short-run stampings.

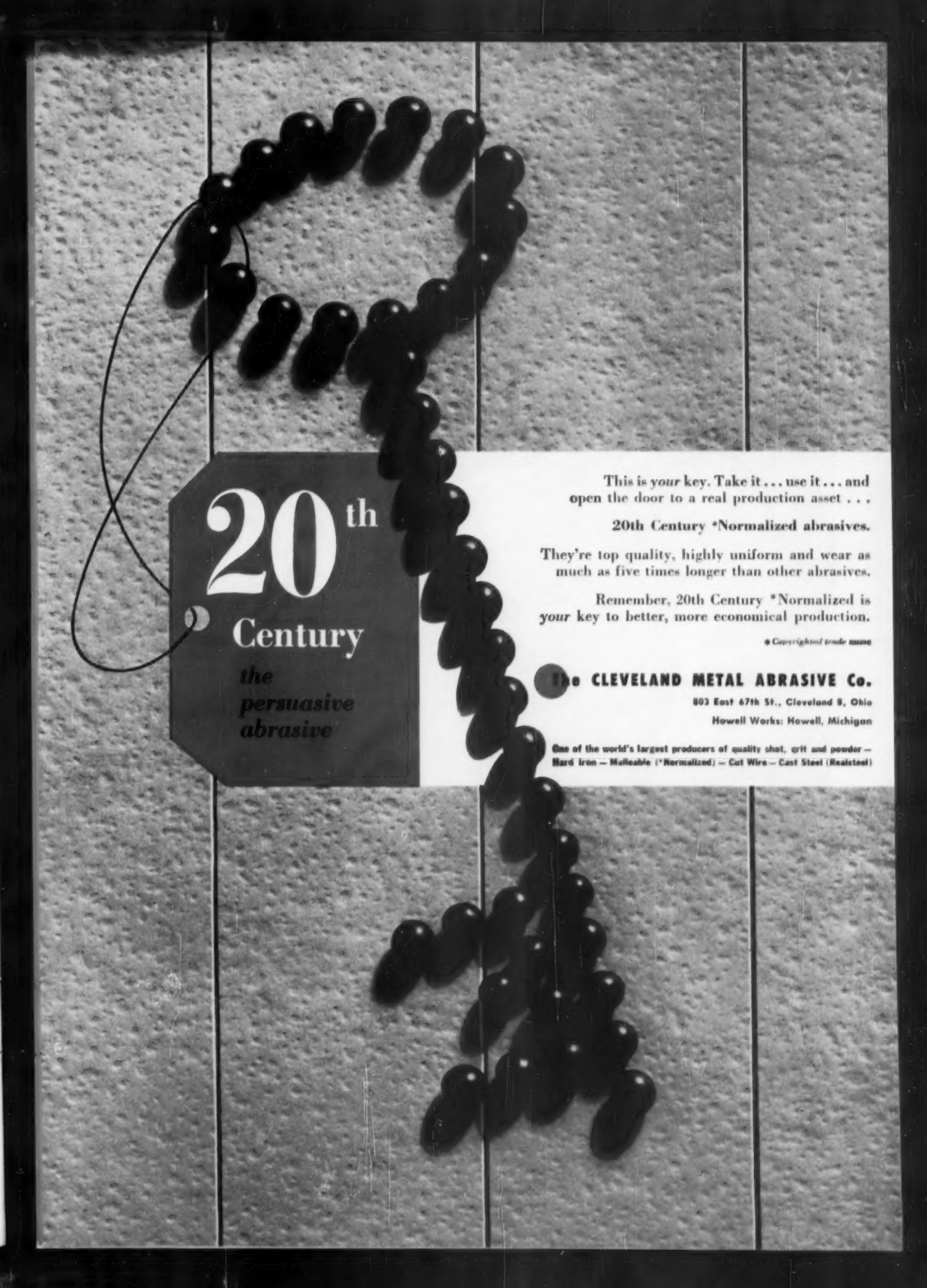
Takes Over . . . American Brake Shoe Co. has taken over the air compressor business of the Defiance, O., plant of the Lynch Corp. American Brake Shoe purchased the rights to the Par air compressor manufactured by Lynch for the past 20 years.

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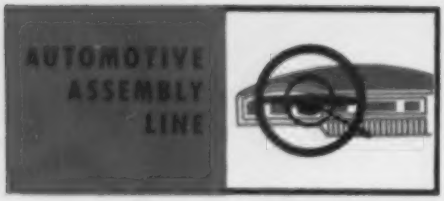
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One of the world's largest producers of quality shot, grit and powder — Hard Iron — Malleable (*Normalized) — Cut Wire — Cast Steel (Realsteel)



American Bets on Two-Car Family

Rambler pointed at second car market . . . Fourteen pct now own two and number is expected to increase . . . Company is now in the black after late start . . . $60 million for improvements—By *T. L. Carry.*

◆ AMERICAN MOTORS CORP., on the first anniversary of the merger of Nash-Kelvinator and the Hudson Motor Car Co., is pinning its hopes for an expanded car market on the growing trend of families to own more than one car.

Although the firm reported a net loss of over $600 thousand in the first quarter this year, George Romney, youthful company president, said that the company is currently operating in the black and predicted that AMC would realize a profit in the second quarter.

Mr. Romney blamed the loss on the late start American Motors got on its 1955 program. It was necessary, he said, to reorganize and integrate the firm's operations. This caused a lot of expenses that will not recur now that the integrated production program is underway.

Spends $60 Million . . . The company didn't hit its stride until last March and sales of new cars in the first 10 days of April increased 22 pct. The same increase was noted in the firm's appliance division. Dealer stocks are now adequate and the company has slightly reduced its production schedule for May.

Looking into the future, Mr. Romney announced that American Motors is going to spend $60 million this year on a product development program. The program will include more tooling and production improvement rather than new plant space. The bulk of the money will be spent on cars rather than appliances although the appliance division is going to make more of its own parts.

In order to increase the market for cars, the company is going to concentrate on families that will own more than one car. Mr. Romney predicted that acceptance of the Hudson and Nash Rambler will increase as the trend.

More Buy Two . . . "Today," he said, "the standard is not what kind of a car you own, but how many do you have."

At the present time, 14 pct of the car-owning families in the United States have more than one car. Surveys show that in the not-too-distant future as many as 50 pct of the families may own more than one auto.

Mr. Romney claims that the Rambler fits ideally into the second car category both in the new and used car market. More and more people, he claims, are going to want a small all-purpose vehicle in addition.

With this in mind, American Motors is going to begin its program on 1956 models on time this year. The new cars will be announced sometime this fall. Benefits American Motors has realized from the merger will become more evident next year when the $60 million improvement program is well underway.



WITH ALL three of American Motors cars assembled on the same line, it is important to have the right engine at the right time. Schedule is broadcast by telautograph machines in the Kenosha, Wis. plant.

Plating development works big changes in metal finishing

♦ Companies plating products with chromium are switching to an advanced process developed by United Chromium . . .

♦ Benefits achieved include fast production, increases in capacity of existing equipment, savings in power, better finishing . . .

Things changed abruptly a few short years ago for companies finishing products with chromium when the Unichrome SRHS Chromium Plating Solution was introduced. It gave users a more efficient, more easily controlled and faster process . . . resulting in better finishing and substantial savings. Here are some recent reports from the field:

EFFICIENCY UP . . . POWER BILLS DOWN

A 60% reduction in power costs was achieved by SRHS when it was installed by one of the country's leading manufacturers of electrical appliances. A 50% slash in power need was made in another plant.

SAME EQUIPMENT . . . 66% MORE CAPACITY

Existing equipment gained 66% additional capacity when SRHS replaced the ordinary solution in the plant of a prominent automotive manufacturer. The change avoided need for costly overtime or extra equipment to increase output.

And on top of such cost reductions, there are also better results with SRHS Solutions. Users get fewer rejects, better color, better coverage of intricate parts, more uniform plates.

This is just one of many United Chromium developments in processes, equipment and materials which provide opportunities to cut your finishing costs . . . opportunities to turn out a better product through a better finish. We'd welcome the chance to work with you.



UNICHROME Trade Mark

METALLIC and ORGANIC FINISHES . . . EQUIPMENT

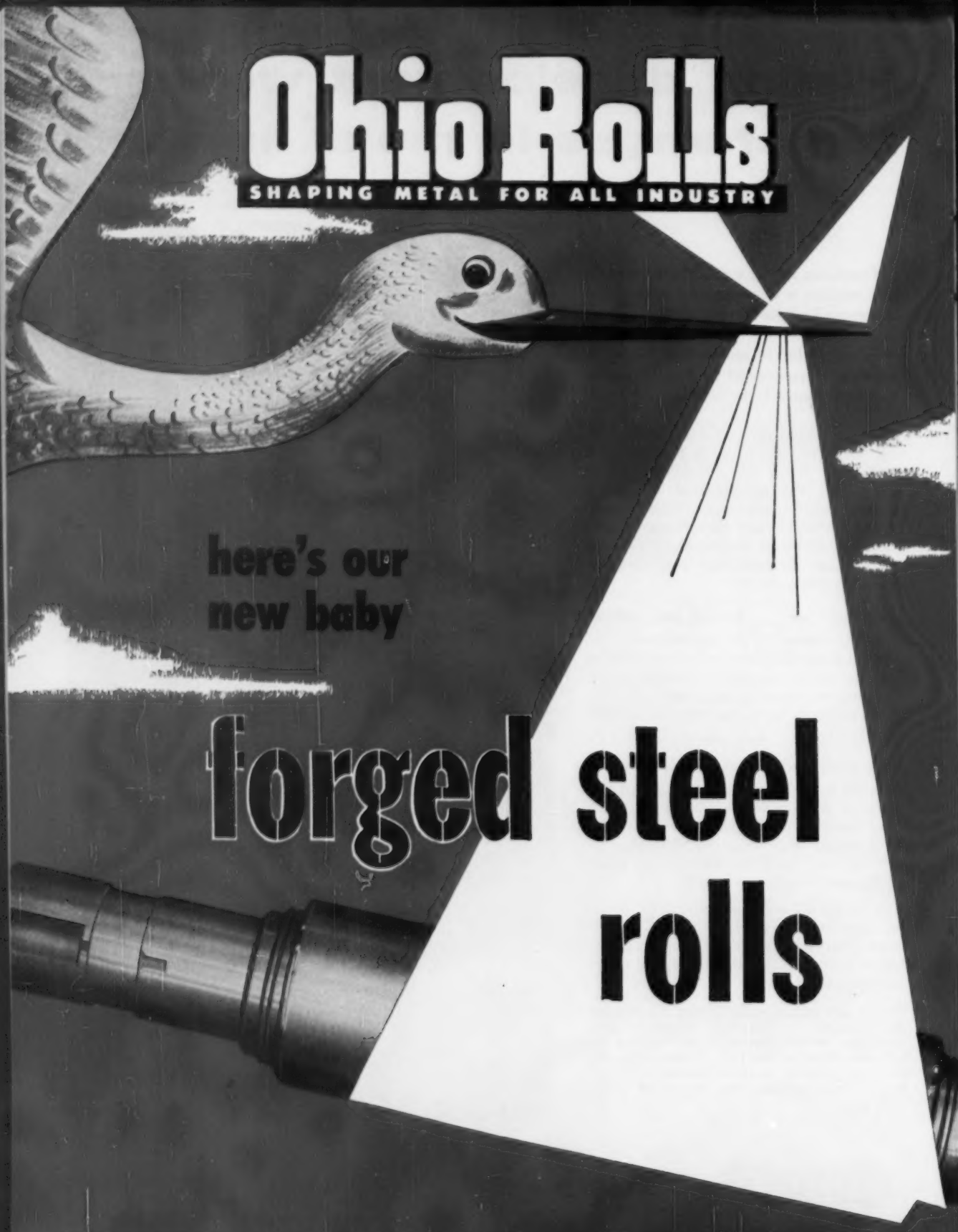
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THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • Plants at Lima and Springfield, Ohio

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Apr. 30, 1955	197,548*	35,157*
Apr. 23, 1955	190,888	34,186
May 1, 1954	133,800	25,406
Apr. 24, 1954	133,948	23,762

*Estimated Source: *Ward's Reports*

Safety Belts:

If public wants them, Chrysler has them.

The trend toward safer automobiles has led Chrysler Corp. engineers to develop an automobile seat belt which will soon be available as optional equipment on all of Chrysler's 1955 models.

The question of how much protection seat belts afford motorists is still largely unanswered but the findings of a study by the Indiana State Police throws some light on the subject. A recent survey which they conducted showed that 268 out of 616 traffic deaths investigated could have been prevented if the victims had been wearing seat belts. In addition, another 104 persons might have been saved if they had used the device.

There are three main reasons that seat belts are advocated by various safety groups.

Aids Driver . . . First, they would prevent a person from being thrown out of a car and suffering possible head injuries or being hit by other cars.

Secondly, seat belts would restrain passengers in the back seat of the car and save them possible injuries that would result if they lunged forward in a crash. Third, in less severe crashes, the driver would have more control of the car if he were firmly secured behind the wheel.

Chrysler's seat belts will be offered either in sets of three for the front seat alone or the car can be fully equipped with belts for six passengers. For the front seat, the belts are attached to a bar located under the seat. The bar is anchored both to the seat frame and the car's floor panel. Rear seat belts are attached to steel reinforcing plates which back up the floor panel behind the seat.

Now that safety belts will soon be available on all of Chrysler's cars, the Dodge Truck Div. is studying the possibility of putting them on its complete line of trucks. The problem of tying the belts to the truck seats would have to be worked out, but public acceptance is the biggest factor.

AMC Extends Contract

Strategy of the UAW in its current contract negotiations for a guaranteed annual wage became more evident recently when the union and American Motors announced an extension of their present contract to Aug. 12. This is well beyond the expiration deadlines for GM and Ford contracts which are May 29 and June 1.

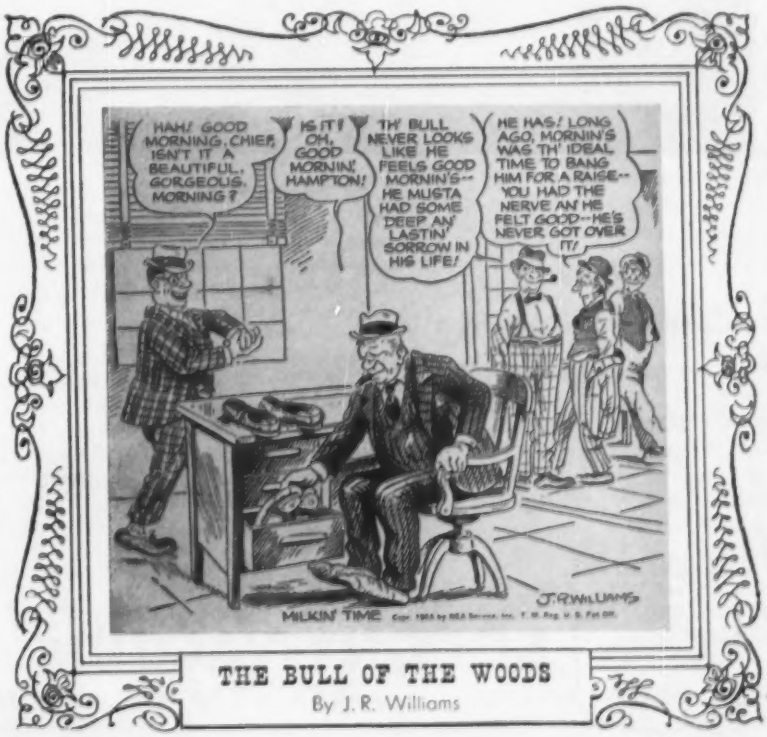
Obviously the union wants to set a GAW pattern with either Ford or GM before any talks are held with the Independent automakers or smaller supplier firms.

In recent preliminary talks with the UAW, American Motors said it would strive to break away from the tradition that smaller companies must follow the patterns set by bigger corporations. AMC at that time said that it was going to ask the union for a contract based upon economic facts as they were related specifically to the company's own situation.

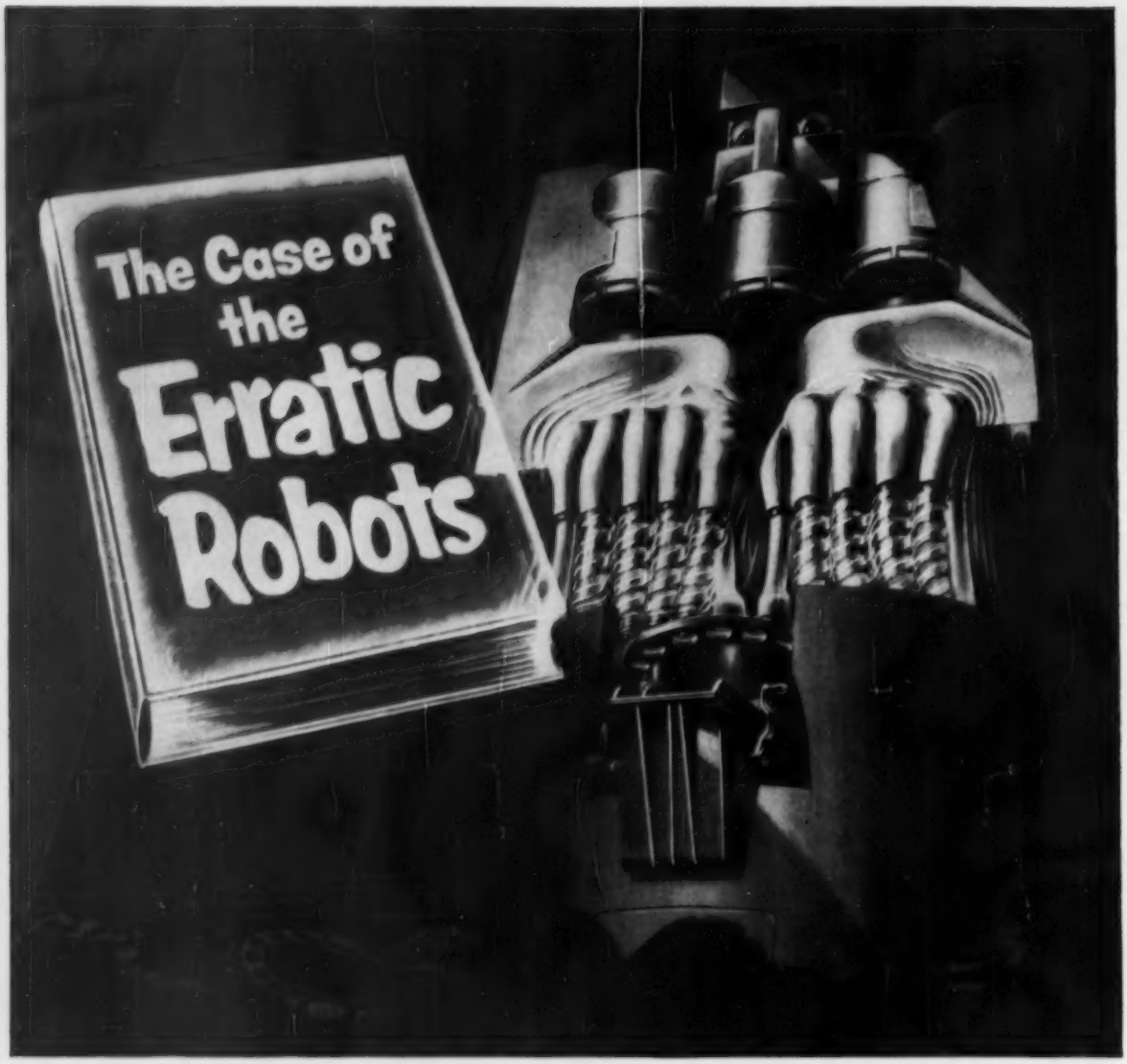
No Pattern Indicated

Extension of the contract does not necessarily mean that American Motors will follow any pattern set by either Ford or GM. But the union can use whatever settlement it gets with the bigger companies as a basis of negotiation. Economics will definitely be a factor to consider in the demands the union makes on the smaller firms.

Originally the American Motors agreements were scheduled to expire June 1 and July 1. The extension calls for a paid holiday on July 4 and continuation of the present cost of living program. All other matters will be subject to future negotiations. The GAW question should be settled well before expiration of the contract extension.



THE BULL OF THE WOODS
By J. R. Williams



How Correct Lubrication cured them— saved $7,600

No question about it—these "robots" were *sick!* Temperature of 194°F...."blood pressure" of 800 psi...constant need of transfusions...erratic motion that made them useless for the precision work they were intended to do.

These robots were two hydraulically-operated, automatic machines in a large auto plant. They were used to face and bore flywheel housing assemblies on engine blocks, and were shut down frequently because of hydraulic valve sticking. To overcome this, the operators had doubled oil pressure in the systems. But this, in turn, resulted in excessive oil leakage and high oil temperature that caused fast deterioration of the oil and further valve sticking. Even complete oil changes every two weeks did not eliminate this trouble.

Socony-Vacuum men tackled this problem. Working with plant personnel, they studied the operations. A carefully designed program of lubrication was put into effect. This cure worked. Oil temperature dropped, and the valve sticking ended. Machine operation was smooth. Parts met precision requirements. Savings have already amounted to $7,600!

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This combination of the right oil plus the world's greatest lubrication engineering service is called—Correct Lubrication. Why not put it to work in *your* plant to help improve production—cut costs?

SOCONY-VACUUM *Correct Lubrication*

FIRST STEP IN CUTTING COSTS

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U.S. Breathes Easier on Manganese

Nearby deposits take nation out of "have not" class . . . Stockpile bulges, industry has plenty, best ores go begging . . . Administration sees no need to extend purchase program—By G. H. Baker.

◆ MANGANESE supplies have improved tremendously in the past 3 years and the Administration now sees no reason to extend its purchase program beyond the scheduled expiration date of 1958.

A House committee is holding hearings on proposals to extend the purchase program for another 5 years. But spokesmen for the Interior Dept. tell the committee an extension is unnecessary from a point of view of supplies, and not worth the extra $317,400,000 it would cost.

In 1951, when the present purchase program was set up, manganese was in short supply and Russia—then the chief source—was permitting only trickles of supplies to leave the country.

Supply Picture Changes . . . Today, the supply situation as far as the United States is concerned is vastly improved. Industry stocks are equal to about a one-year supply. Minimum stockpile objectives are exceeded. Premium-quality ores are "going begging on the market."

The recent discovery of high-grade deposits in Mexico and Cuba was the factor that turned the tide and converted the U. S. from a "have not" nation in manganese to a "have" nation. And the close proximity of these deposits means we are sure of supply.

Defense Spending Stays . . . Get set for a long, long pull in the defense program. Big-scale armed might is to be with us for a long time to come. Rumors of coming cut-backs, of sharply - reduced spending once the program is "over the hump," just don't fit in with the facts.

More-or-less permanent mobilization for defense, both at home and abroad, is now being blueprinted by the Eisenhower Administration. The program will extend indefinitely into the future. No longer are Washington mobilization planners talking about a "2-year" or a "5-year" preparedness program. Last week, Mobilization Director Arthur Flemming bluntly predicted that the present state of affairs will probably extend for 40 or 50 years.

Hold High Level . . . As far as government procurement is concerned, this means that buying of planes, tanks, ships, guns, armament—not to mention vast stocks of housekeeping items like paper towels and clothing—will keep the total national defense bill to somewhere around the $40 billion-plus level for years to come.

In the new fiscal year starting July 1, the nation's total defense bill, including activity both at home and abroad, will come to about $41.2 billion. This is well over half the total federal budget. Routine maintenance, plus modernization and replacement, accounts for a large part of this figure, and any substantial increase in the Army, Navy, or Air Force will kick the total figure still higher.

As long as the U. S. is forced to survive in a tense world, you can expect high spending, high taxes, and a constantly-widening degree of federal control over business and industry.

See Atomic Navy . . . Atomic-powered ships are not as far off as the Navy thought only last year. It now appears that the Navy's experimental atomic submarine, the *Nautilus*, has turned in performance data showing that its atomic reactor has an estimated life of "two or three times" the original estimate. Says Secretary of the Navy Charles S. Thomas: "I think the potential for atomic propulsion is terrific."

Without disclosing details of performance, he hints broadly that

What's New With Titanium

▪ Two government-sponsored research reports on titanium are newly placed on sale by the Office of Technical Services, U. S. Commerce Dept.

One study, conducted by Battelle Memorial Institute, describes the effect of hydrogen on titanium and titanium alloys. The report, "The Effect of Hydrogen on the Mechanical Properties of Titanium and Titanium Alloys," is priced at $2.25. Its order number is PB 111568.

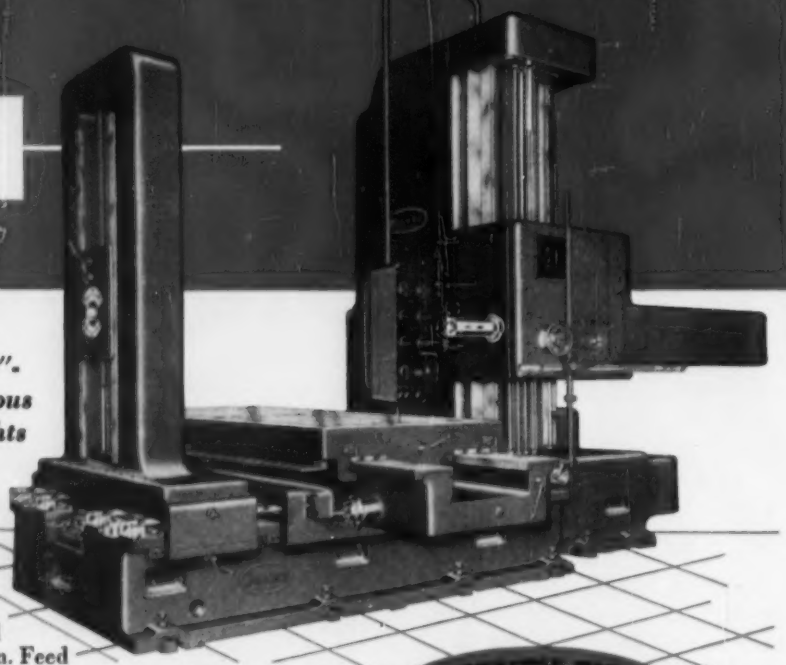
University of Michigan prepared the second report, "The Effect of the Cutting Fluid When Turning Titanium." It describes results of tests of cutting fluids on commercially pure titanium, three titanium alloys, and hot-rolled SAE 1045 steel. Price of the report, PB 111478, is 50¢.

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MODEL 75



Available in 3"- 4"- 5"- spindle sizes with various bed lengths, post heights and table sizes.

PENDANT CONTROL – complete machine control from a movable pendant station. Feed and speed rate selection, directional feed and traverse engagement of the spindle, head, table and saddle, spindle rotation and operation of head binders are accomplished from the Pendant.

BOTH SCREW AND RACK FEED – to the spindle provide smooth, steady screw feed for boring and sensitive hand feed for small drilling and tapping.

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atomic power for nearly all types of naval vessels is nearly at hand.

All this means of course that some radical changes lie ahead in the design and production of ship and marine engines, machinery, and related equipment. Just as oil replaced coal in vessels as a source of fuel in vessels 30 years ago, it is now evident that another big change-over—from oil to atomic power—is to begin taking place in the next few years.

Bill Builds Jobs . . . Industrial development corporations would be assisted in bringing new business into labor-surplus areas under legislation recently offered in Congress.

Rep. James E. Van Zandt, R., Pa., is sponsoring a bill to permit the Small Business Administration to grant loans of up to $100,000 each to corporate business-seekers. Under the same authority, industries in areas with substantial unemployment could be expanded and modernized to make jobs.

Loans would be made by SBA only if the development corporations are unable to get financial help from other sources on reasonable terms. Security for the loans would be required, and no loan would have a maturity date of more than 25 years.

Brownout:

Wilson tightens security on Pentagon news sources.

Flow of some military information, especially technical data and compilations on military weapons and processes, will be reduced somewhat in the future under terms of a news brown-out now in effect at the Defense Dept.

Order tightening security over publication of military information was issued by Defense Secretary Charles E. Wilson so that this country "will not inadvertently give our enemies advantages which they do not already have."

Effect of the order is to restrict compilations of information about weapons and processes, even though individual items may have previously been released, and to keep a tighter rein on initial publication of new developments. The defense chief denies fears that the agency has "resolved arbitrarily to restrict the flow of information," adding that the military cannot "operate in a fishbowl."

He has appointed R. Karl Honaman, former Bell Telephone Co. executive, as deputy assistant secretary of defense for public affairs to handle the program. Mr. Honaman, director of the Office of Strategic Information at the Commerce Dept. for the past several months, says he opposes publishing certain unclassified military data, citing particularly performance data on guided missiles.

The Air Force also has notified its commands that in the "interest of preserving military security," precautions must be followed in releasing technical information concerning military policy, nuclear weapons, guided missiles and improved techniques.

Okay Profit Check

Profits from government contracts made in 1955 and 1956 will be subject to renegotiation despite protests from industry.

A measure extending the Defense Contracts Renegotiation Act for 2 years has cleared the House and is expected to find smooth sailing in the Senate. The act expired last Jan. 1, but will be extended retroactively.

One amendment requested by business groups is included in the 2 year extension. This makes it clear that standard commercial articles and certain other items which are exempt from renegotiation are not subject to profit limitations under other laws.

The new act continues all other exemptions of the old law, including procurement outside the U. S. Cases where the government is sure prices are reasonable, cases where renegotiation would jeopardize security, and exception for contracts involving less than $500,000. However, all firms handling government contracts, no matter how small, must file financial reports. Renegotiation affects the annual sum of profits on all government contracts handled by one firm.



"Thirty days has September, April, you and November."

Takes Commerce Post

New director of the iron and steel division of the Business and Defense Services Administration is Thomas J. Moore, Jr., general manager of Sharon Steel Co., Brainard Steel Div., Warren, O.

Mr. Moore, a major in the Army Ordnance Corps in World War II, replaces Howard J. Mullin in the Commerce Dept. post. Mr. Mullin is St. Louis sales manager for U. S. Steel Corp.

Mr. Moore will serve without pay in the post for about 6 months.

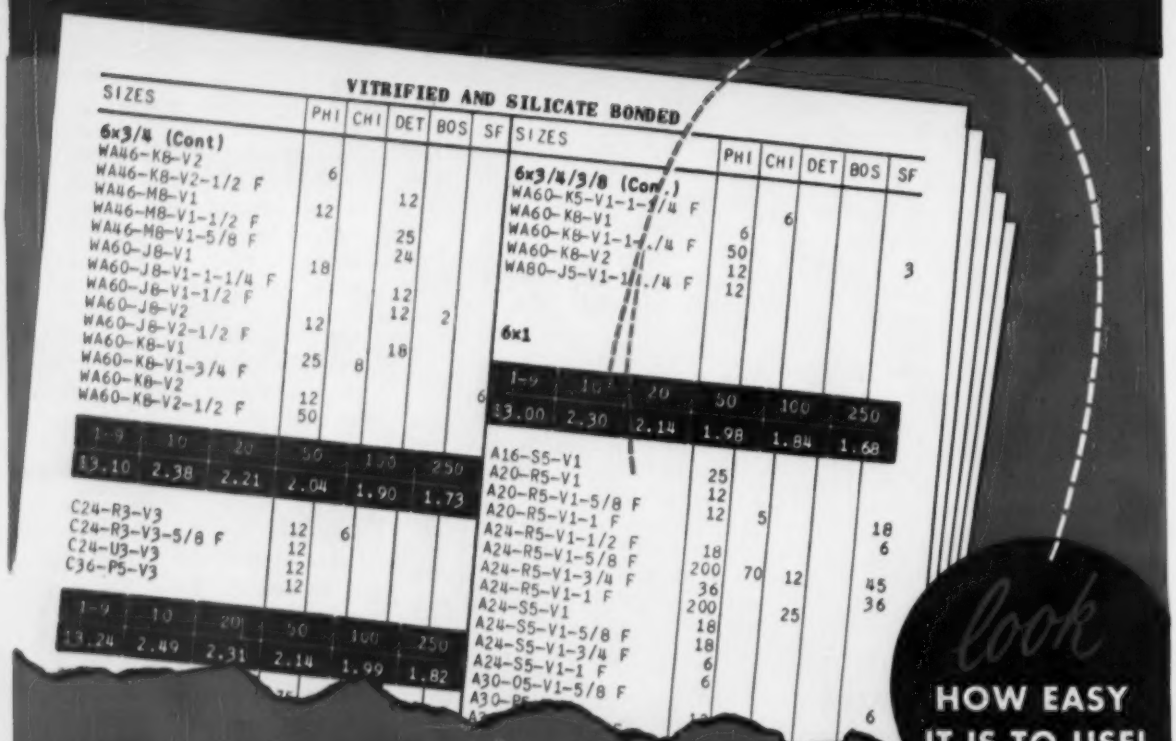
Railroad Orders Rise

Orders for new locomotives are at a high level this spring.

On April 1, Class I railroads had 428 new locomotives on order, including 421 diesel-electric and 7 electric units. A year earlier, new locomotive orders were only 365.

The railroads installed 306 new locomotives in the first quarter, all of them diesel-electric except for three electric units. In January, 121 new locomotives were put in service; in February, 100; and in March, 85.

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Grinding wheel users will find this book a boon to the problems of grinding wheel pricing and delivery. Here, shown together for the first time, is complete availability of all the stock items of Simonds Grinding Wheels and *Consumer Net Price* per wheel in every ordering quantity.

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Division of Simonds Saw and Steel Co., Fitchburg, Mass. • Other Simonds Companies: Simonds Steel Mills, Lockport, N.Y.
Simonds Canada Saw Co., Ltd., Montreal, Quebec, Lion Grinding Wheels Div., Brockville, Ont. and
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WEST COAST REPORT

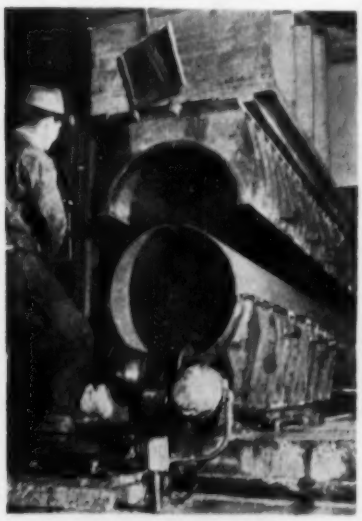
West Aircraft Expansion Threatened

Sec. Talbot warns that concentration is dangerous in case of atomic attack . . . Companies say expansion is complete, point to expense of moving industry . . . Kaiser buys pipe mill—By *R. R. Kay.*

◆ STOP the growth of southern California aircraft plants! Air Force Secretary Talbott says it must be done to cut the risk that the nation's aircraft production capacity will be vitally crippled by nuclear attack.

"We would like to have the aircraft industry more dispersed. Twenty-five per cent of industrial southern California is dependent on military aircraft for its pay. That is dangerous. We are going to try not to allow further expansion on the Pacific Coast of personnel working for aircraft manufacturers," Mr. Talbott said.

Reactions Vary . . . Four major aircraft companies checked by THE IRON AGE had this to say:



LARGE diameter pipe is formed at new Kaiser plant acquired from the Basalt Rock Co., Napa, Calif.

"It's nothing new — been discussed over the years; and we're still getting more and more business. Backlog in southern California alone is $4 billion and it's constantly rising."

"We don't have any plans for expansion. Most of the industry completed its brick and mortar growth about a year ago."

"All our plants are permanent installations . . . It would take years to move them."

"The industry now has reached its peak of productivity for peacetime use. Our plants, with 30 million sq ft, can handle any foreseeable production needs."

"Aircraft employment is only eight per cent of all employment in Los Angeles. Aircraft manufacture is not as vital to Los Angeles' economy as automobiles to Detroit's or steel to Pittsburgh's."

Calmness prevails; but there's no doubt that West Coast industrialists will be taking a more frequent look over their shoulders in Mr. Talbott's direction. And Mr. Talbott himself will be taking a peek or two over his own shoulder at economy-minded congressmen who are sure to ask, "What price dispersal?"

Kaiser Expands . . . One of the West's largest pipe fabricators is selling its facilities to Kaiser Steel Corp., Oakland, Calif. A multi-million-dollar deal gives Kaiser the Basalt Rock Company's Steel Div. plants in the San Francisco and Los Angeles areas. The two plants employ 800 workers.

Basalt makes large diameter expanded steel line pipe (6⅝ to 35-in. diam, up to 40 ft long), medium diameter electric resistance weld pipe, large diameter steel reinforced concrete pipe, and other fabricated steel products.

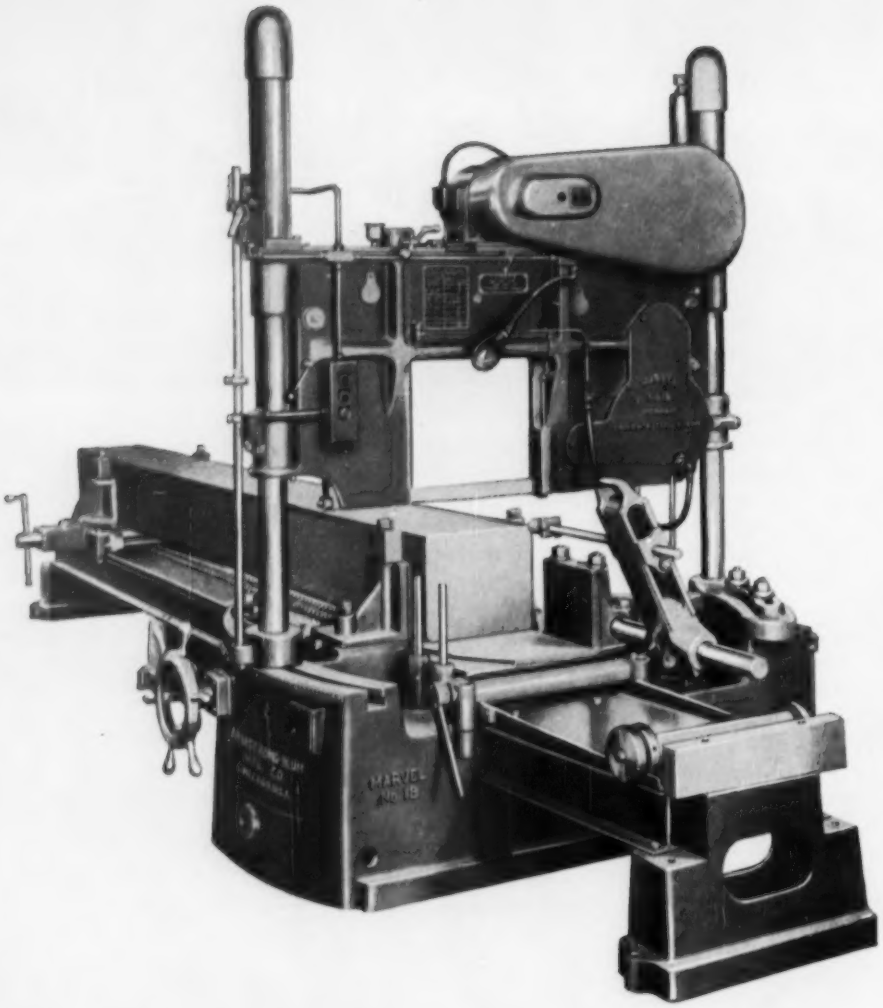
Kaiser also plans to buy land, coal rights, and mining facilities of St. Louis, Rocky Mountain & Pacific Co. at Raton, N. M.

Moving West . . . More and more eastern companies are coming West. What brings them? The growing market. Westerners are buying more cutting tools, fasteners, materials handling equipment, industrial oil burners. These companies are among those who want a share of the business:

Norton Co., Worchester, Mass., will make grinding wheels at Santa Clara, Calif. . . . American Bobbin Co., New York, expanded its Westco Steel Co. subsidiary, Oakland, Calif., by purchase of Chicago Ornamental Iron Co., North Hollywood, Calif. . . . Eclipse Fuel Eng. Co., Rockford, Ill., bought Mettler Co., Los Angeles, producer of commercial and industrial gas and oil burners.

Breeze Corp., Inc., Union, N. J., bought Superior Eng. Corp., Culver City, Calif., producer of truck wheel assemblies . . . National Diamond Laboratory, New York, formed a Glendale, Calif., unit for diamond tool manufacture . . . Aeroquip Corp., Jackson, Mich., took over Marman Products, Inc., Los Angeles manufacturer of pipe clamps, flexible joints and valves.

Fairchild Camera & Instrument Corp., Syosset, N. Y., is building an East Los Angeles plant.



No Job too big or too tough . . .

for MARVEL "*Giant*" Hack Saws

These giant MARVEL Hydraulic Hack Saws (No. 18, Capacity 18" x 18"; and No. 24, Capacity 24" x 24") were *basically* designed for rapid and economical cut-off of BIG WORK. They are not merely "conventional" designs "stretched" to big capacity. They are truly designed and built with the ruggedness and rigidity necessary to withstand the rough treatment of sawing big work, even though the work is in the "toughest of the tough" alloys.

They are reliably fulfilling the cut-off requirements in innumerable steel mills, forge shops, structural shops, warehouses, and machine shops, with assured low tool cost and minimum kerf loss of steel.

In addition to cutting-off, they are reducing costs by eliminating further machining operations. Heat treated die blocks are being reclaimed for re-sinking by sawing off the worn face; columns, beams, pipe, and tubing are being sawed to *finished*, square ends, eliminating milling; angular sawing is done conveniently by swinging the upper structure on the base, to any angle up to 45 degrees—*without moving the work*.

Contemplating the modern trend toward ever tougher steels and larger sizes, these are the logical sawing machines to buy, not only for today's needs but for tomorrow's as well.

Write for Catalog

MARVEL *Metal Cutting* SAWS
Better Machines - Better Blades

ARMSTRONG-BLUM MFG. CO. 5700 West Bloomingdale Avenue • Chicago 39, U.S.A.

MACHINE TOOL HIGH SPOTS

Happy Builders Wonder Who's Buying

March figures show new orders hitting $60 million mark for 4th straight month... Order spurt is boosting shipments... Builders are smiling but can't pinpoint new buying source—By *E. J. Egan, Jr.*

◆ SUDDENLY, last December, "a bunch of guys named Joe" started buying new metal-cutting machine tools from U. S. builders. By the end of the month they'd ordered a surprising $60 million worth.

But they didn't stop there.

They tacked on another $60 million in January, boosted their February buying to $61.9 million, and their March purchases have just been added up to an educated estimate of $63.4 million.

That's 4 straight months in which new orders have hit $60 million or better. And it's quite a contrast to the seesaw pattern during the first 11 months of 1954. In that stretch orders touched a $54.8 million high in June, but slumped off to the year's low of $35.4 million in November, just before the "Christmas rush."

Show Sharp Contrast . . . The sudden buying enthusiasm is really pointed up when first-quarter totals are compared. New orders for the first three months of 1954 totaled only $148.7 million. But they added up to $185.3 million for the same period this year.

No wonder members of the National Machine Tool Builders Assn. wore expressions of pleasure and surprise as they headed for their annual spring meeting in Chicago today and tomorrow.

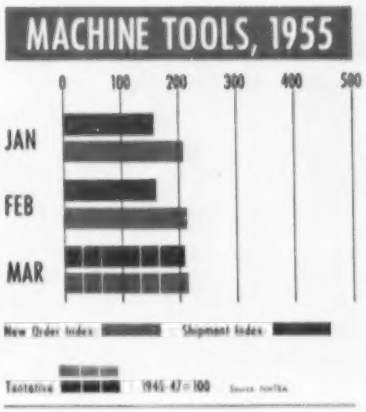
Reason for their pleasure is obvious: With new orders increasing steadily, shipments are perking up also. Builders shipped an estimated $59.9 million in March compared with only $49.8 million in February. And the industry's 4.2-month, end-of-February backlog had lengthened to almost 4½ months when all the March statistics were figured up.

Whodunit . . . Reason for the builders' surprise lies in the still-hidden answer to this question: Who is buying all these new machine tools? Builders don't report their customers' names or even their industrial classifications to NMTBA headquarters when they submit their monthly volume figures.

But from all indications no one industrial group or major defense project is responsible for the new business upturn. Orders are coming from all segments of metalworking manufacturing—from "a bunch of guys named Joe."



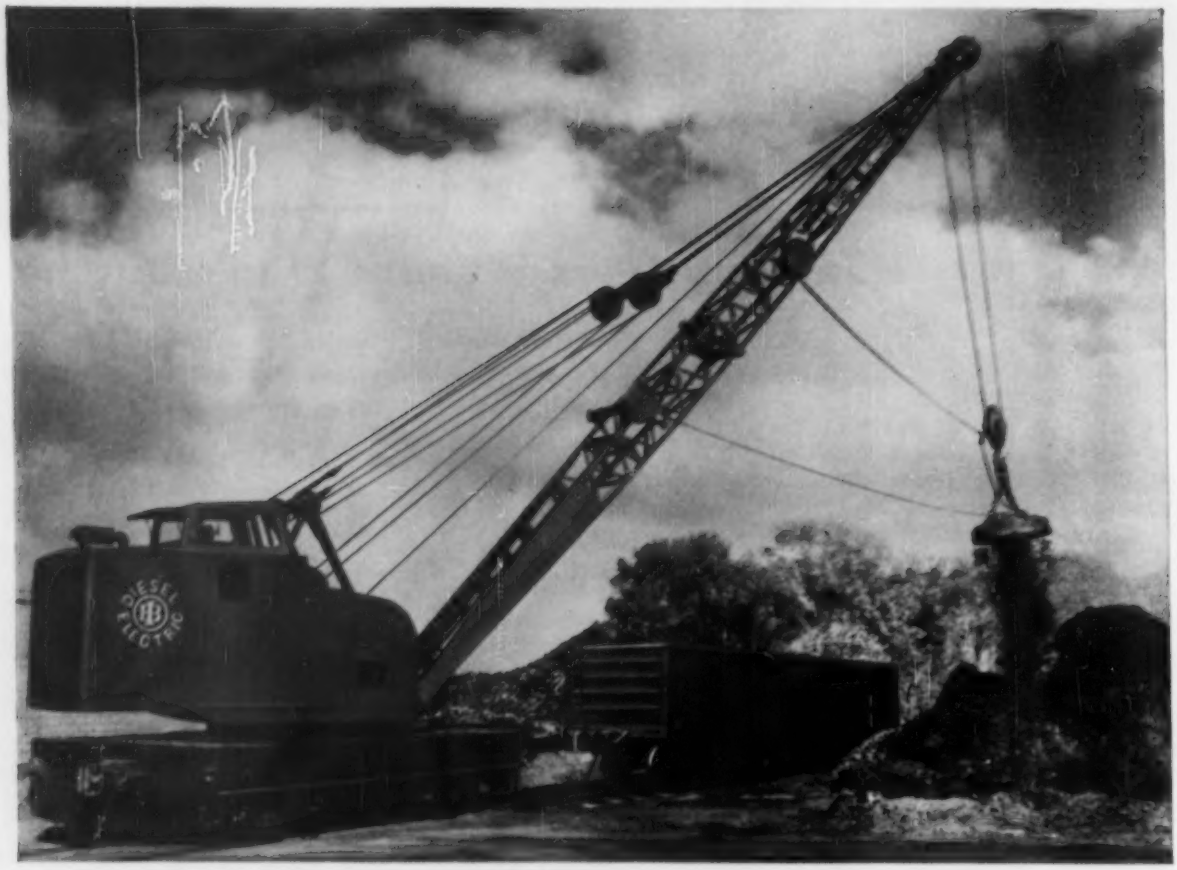
"Perkins! This sideline of yours has got to stop."



Hope Spenders Come . . . Builders hope that over 200,000 more American and foreign nation "Joes" will swarm down on Chicago this September, jingling spare cash in their pockets. September 6 to 17 is the period set for the giant National Machine Tool Show.

This show will be the first that U. S. builders have held since 1947. Exhibitors will number 166 at the main event, and there will be another 160 mechanism, instrument and equipment makers displaying their wares on Navy Pier, at a concurrent and supplemental Production Engineering Show.

Show Tools Only . . . Exhibits at the International Amphitheater will (except for the trade press) be confined entirely to machine tools. According to Tell Berna, NMTBA general manager, there will be many more big machines than there were at the 1947 Show. This will involve a larger number of transfer machines, and more big presses, Mr. Berna said.



With magnet hook or bucket... BROWNHOIST speeds the job

Brownhoist Cranes are helping maintain high production schedules in mines, steel mills, factories, and scrap yards . . . in fact, wherever there are railroads throughout the world. Brownhoist Diesel-Electric Locomotive-Cranes, for all their husky size, handle easily. Their patented Monitor Type Cab and Clear-Vision Boom give a 360° view. Operating controls are within easy reach. Electric travel permits operation as a switch engine as well as a crane. Constructed to last for many years with little maintenance. Brownhoist Diesel-Electric Cranes are available in capacities from 25 to 100 tons. For complete information, consult your nearest Brownhoist representative or write us today.

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The Iron Age

SALUTES

David C. Holub

Practical knowledge and broad intelligence have made him a leader in an industry that licks complicated problems to keep scrap metal moving into the nation's steel furnaces.

Dave Holub is an authority on scrap metal operations in the United States. This simple statement covers a working knowledge of one of the most complicated and vital industries in the country.

Dave heads Holub Iron and Steel Co., Youngstown and Akron, O.; he is president of the Institute of Scrap Iron and Steel. The government has repeatedly sought his advice on scrap.

Dave is an authority on scrap and that's saying quite a lot. A good scrap man must understand a product made up from thousands of distinct items. He must be on top of a market that never stands still. He must know the exact scrap needs of steelmaking processes.

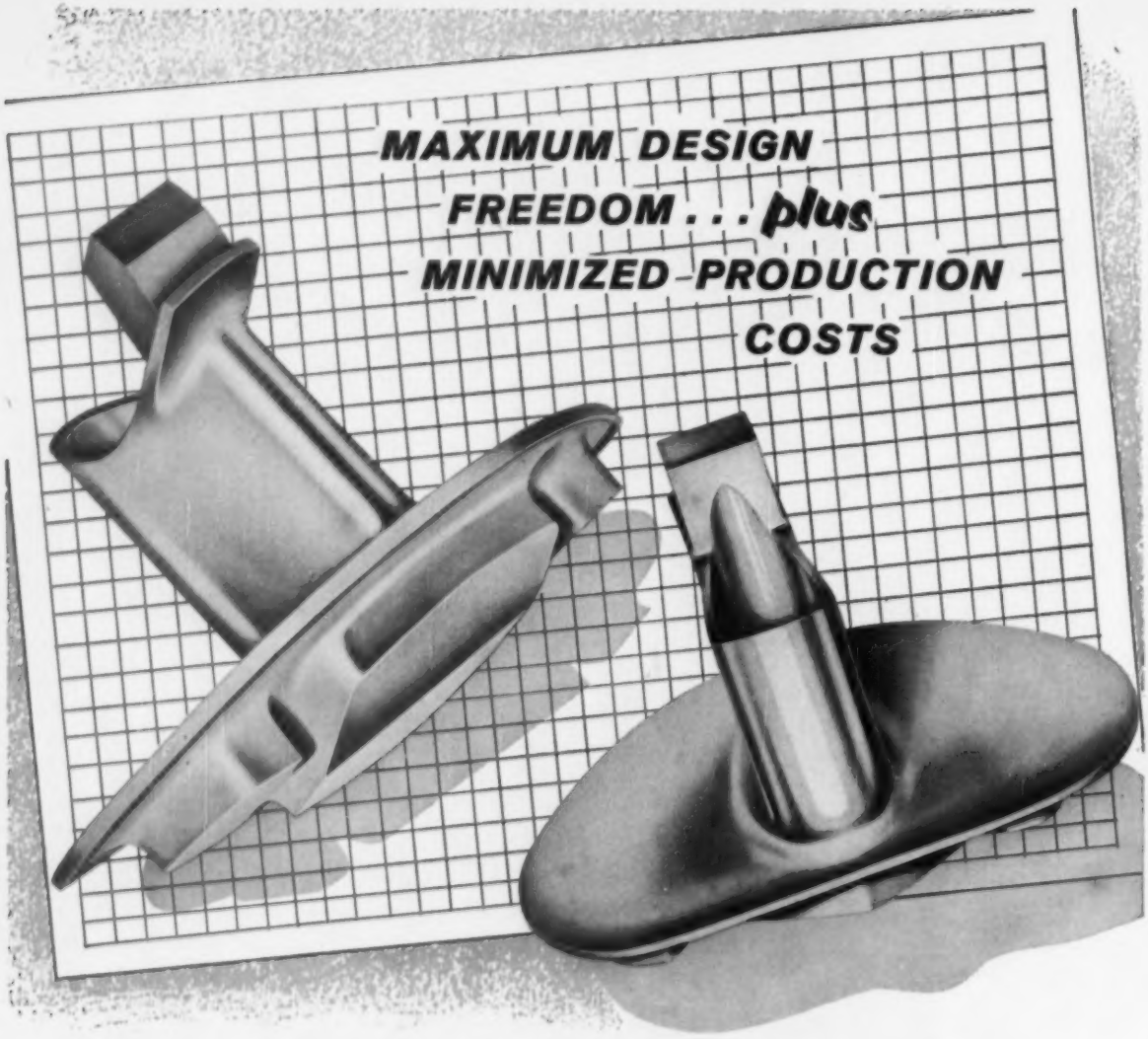
Dave understands the mechanics of the business—how to buy, sell and move scrap. As a medium size dealer and broker, he can appreciate the headaches of both the small dealer and the large broker. He is a man of broad intelligence, well able to grasp scrap economics on a national scale and to act for the whole industry.

Dave is a native of Akron, O. He attended the University of Michigan, specializing in finance, and receiving his degree in 1916. After serving as a Navy officer in World War I, he formed his own company in Ohio.

Successful company operation and efforts in behalf of the whole industry have won him wide recognition. In 1951 he was called to the Office of Price Stabilization as chief of the iron and steel section.

He was appointed chief of the iron and steel branch of OPS's industrial and manufactured goods division in 1952, and in 1954 was named consultant on scrap for the Office of Defense Mobilization. He was elected president of the Institute of Scrap Iron and Steel last year.

Dave is a likeable, reasonable man, good at resolving tangled questions, successful in civic as well as business activities. Grandchildren and golf claim a major portion of time left over from solving large and small scrap problems.



Intricate Arwood Investment Cast Parts Save as Much as 77%

Because of the vast design freedom permitted by the Arwood investment casting process, applications of Arwood investment castings are virtually unlimited. Shapes impractical to obtain by conventional methods can now be produced economically . . . with many former sub-assembly jobs being cast as single, rigid units. The applicability of unmachinable metals is an additional economy factor.

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67 WASHINGTON STREET • BROOKLYN 1, N. Y.

PLANTS: Brooklyn, N. Y.; Groton, Conn.; Tilton, N. H.; Los Angeles, Calif.

CASE STUDY

DESIGNATION: Strut for jet aircraft engine.

METAL: Timken 1722A Steel.

PARTS: Designed and cast as a single unit.

QUALITY CONTROL: 100% X-ray and magnaflux inspected. Chemical and physical affidavits furnished. Test bars submitted.

ADVANTAGES: Only the investment casting process could produce this complex part as a single unit, meet the exacting aircraft quality requirements, and reduce the over-all cost to the customer.

The Iron Age INTRODUCES

J. A. Hammond, named general field manager, electrode product sales, **National Carbon Company,** a division of **Union Carbide and Carbon Corporation. J. M. Schreiner,** appointed Pacific division manager, San Francisco. **J. S. Copley,** eastern division manager, Pittsburgh, and **James King, Jr.,** appointed central division manager in Chicago.

Roger W. Robinson, appointed sales manager, **Clark Equipment Co. Wade A. Eskridge,** named manager of the Automotive Division's new field office in Tulsa, Okla.

Arthur J. Buckley, named sales manager of **Pangborn Corp.,** Hagerstown, Md.

Gen. Walter Bedell Smith, named chairman of the board and president of **AMF Atomics, Inc. Arthur V. Peterson** is to be vice-president.

James Flood, appointed plant metallurgist in charge of metallurgical and chemical activities, **Eaton Manufacturing Co.'s** Reliance Div. at Massillon, Ohio.

Thomas F. Patton, asst. pres., **Republic Steel Corp., W. Wayne Hancock,** vice-president in charge of finance, and **Norman W. Foy,** vice-president in charge of sales, are having Great Lakes iron ore carriers named after them.

William F. Otto, appointed manager, New York district sales, **Revere Copper and Brass, Inc.**

James C. Black, appointed general manager, Reduction Div., **Reynolds Metals Co. E. J. Appel,** manager of facilities development of Reduction Div. **H. W. Shoemaker,** manager of reduction plant at Troutdale, Oregon, and **Vernon G. Kneeskern,** plant manager.

Norman L. Deuble, appointed manager of newly-created Metallurgical Development Div. of **Climax Molybdenum Co.**

Howard V. Clark, promoted from sales vice-president to executive vice-president; **V. R. Bates** from sales manager for strip steel to sales vice-president; and **A. D. Brown** from eastern plant manager to vice-president—operations, **Detroit Steel Corp.**

Roger E. Gay, president, **The Bristol Brass Corp.,** elected chairman and given leave of absence to serve as director of the division of cataloging, standardization, inspection and quality control, **Dept. of Defense,** Washington.

C. B. Boyne, named director of customer service, **Allegheny Ludlum Steel Corp.,** Pittsburgh. **Roger S. Ahlbrandt,** appointed executive assistant to the vice-president in charge of sales. **F. Price Norris,** director of stainless and specialty steel sales, and **W. R. Yingst,** named coordinator of production control.

William H. Knoell, assistant secretary, **Crucible Steel Company of America,** Pittsburgh.



ROBERT S. STEVENSON, elected president, Allis-Chalmers Mfg. Co., Milwaukee.



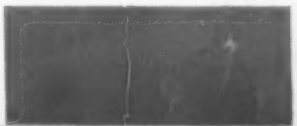
ROBERT C. OVERSTREET, named president, Tinnerman Products, Inc., Cleveland.



FRANK L. MAGEE, appointed executive vice-president, Aluminum Company of America, Pittsburgh.



HOWARD S. BUNN, named executive vice-president and member of executive committee, Union Carbide and Carbon Corporation, New York.



Richard E. Coulter, elected assistant treasurer of **Aluminum Company of America.**

Harold M. Schudt, elected president, Canadian Allis-Chalmers Ltd., **Allis-Chalmers Manufacturing Co.**

Robert Lovell, manager of aircraft sales, **Townsend Company,** New York.

Thomas I. Stephenson, Jr., named manager, Tennessee operations, **Aluminum Company of America.**

Roy C. Ingersoll, named president and chairman of the board, **Borg-Warner Corp.,** Chicago, Illinois.

J. E. Horner, named manager of sales, **J. J. Arntz,** assistant sales manager, and **M. W. Freese,** promotion and market development manager, Ohio Seamless Tube Div., **Copperweld Steel Co.**

John A. Crawe, appointed to the newly created position of manager, commercial development, **Lukens Steel Co. Norman Dixon,** named assistant to the controller.

W. W. Rinehart, recently named assistant controller, **Crucible Steel Co. F. W. Bloom** succeeds Mr. Rinehart as works controller at Midland.

Harold C. Medley, named chief engineer of the Conveyor Div., **Jeffrey Mfg. Co.,** Columbus, O. **Arnie J. Kindig** replaces Mr. Medley as manager of conveying research and development. New chief engineer of the Mining Div., is **Morton B. Curley. John Beltz** moves into the new position of chief consulting engineer to the mining div.

Robert E. Crean, appointed manager of the **Lincoln Engineering Co.'s** Philadelphia sales office.



DR. AUGUSTUS B. KINZEL, named vice-president—research of Union Carbide and Carbon Corporation, New York.



JOHN E. POTTER, appointed secretary and treasurer, Tinnerman Products, Inc., Cleveland.



R. WORTH VAUGHAN, elected executive vice-president, American Smelting and Refining Company.



OSCAR S. STRAUS, vice-president and treasurer, American Smelting and Refining Co.

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SET-UP *and* **HOLD-DOWN TOOLS**





ARMSTRONG Set-up and Hold-down Tools reduce setting-up time—keep men and machines producing. Designed for use on planers, drill presses, milling machines, etc., they hold work securely and rigidly, and thereby reduce spoilage and prevent costly accidents. Your local Armstrong Distributor carries ARMSTRONG Set-up and Hold-down Tools in stock in sizes for every operation. Stop haphazard setting-up methods. Provide each of your machines with a full complement of ARMSTRONG Set-up and Hold-down Tools.





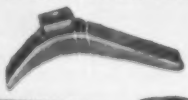




















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Vanadium-Alloys Steel Company

where the going is

hot and heavy

protect production with our **first quality**

DIE STEELS for HOT WORK

Hotform—*5% chromium type.* For die casting dies, dummy blocks, extrusion dies, backer blocks, mandrels, hot piercers, hot forging dies. *Strong, tough, resists heat checking.*

Forge Die—*14% tungsten type.* For forge die inserts, extrusion dies, gripper dies, hot pressing dies, dummy blocks, hot piercing tools. *Resists softening; stable under impact.*

SC Special—*14% tungsten type plus increased carbon.* For hot forging dies and punches, extrusion tools, hot forming rolls.

Marvel—*9.50% tungsten type.* For brass forging dies, extrusion press tools, nut dies and piercers, hot shears, hot swaging dies.

Hotpress—*9.50% Tungsten type* with low chromium for added toughness. For hot press dies, extrusion press tools, upsetter machine dies.

WW Hotwork—*12% tungsten, 12% chromium type* for unusual heat and wear resistance. For brass-casting dies, die casting nozzles, special extrusion dies.

Red Cut Superior—J Temper *18% Tungsten High Speed Die Steel.* For hot press dies for copper and brass, extrusion dies, hot and cold trim dies, punches, heading dies. *High hot hardness and wear resistance.*

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Manufacturers of First Quality Tool and Die Steels

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ENTIRELY NEW
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FLEXIBLE LINK CHAIN

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FEATURING:

- Push Button Control
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- "CM-Alloy" Flexible Link Chain

CAPACITIES: from ⅛ to 1 ton. Single and 3 phase. ¼ ton model weighs only 51 pounds.

$149.50 and up

Built to serve you without costly maintenance



Lodestar is the first truly "heavy duty" version of the small electric hoist. The CM Lodestar is designed to operate without costly maintenance or interruptions in your work schedules. The initial cost is practically your only cost with a Lodestar... an extremely low cost indeed!

WRITE US or call your CM distributor for literature, prices and quick delivery from stock.

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CM HOISTS AND CHAIN

PERSONNEL

Edwin J. DuBane appointed office manager of the Nashville plant of **Solar Steel Corp.** **David N. Scott,** named product sales manager for the southern states.

H. L. Peek, appointed engineer in charge of the development group, **W. L. Vance,** engineer in charge of circuit breaker design, and **J. F. Claffie** to section engineer for high voltage outdoors breakers for the **Allis-Chalmers** Boston works. **Milan P. Getting, Jr.,** named assistant general manager to the Pittsburgh works; **George Shombert, Jr.,** assistant to the works manager and **S. W. Phillippi,** assistant superintendent, Electrical Test Dept.

Menno Felber, named assistant manager of manufacturing, Industrial Power Div., **International Harvester Co.** **Henry A. Torgersen** succeeds Mr. Felber as manager of the tractor works in Chicago.

W. A. Thomas, appointed works manager, **Atlas Steels Ltd.,** Welland, Ont. **G. C. Olson** becomes plant superintendent.

Hugh C. Land, succeeds **William P. Drake as** head of **Pennsylvania Salt Mfg. Co.'s** Industrial Chemicals Div.

H. C. Chobanian, appointed assistant purchasing agent, tractor products, **Allis-Chalmers Mfg. Co.,** West Allis works.

H. L. Cummings, named general manager of the R. P. & C. Valve Div., **American Chain & Cable Co., Inc.**

OBITUARIES

Claude B. Schneible, 61, president and founder of the **C. B Schneible Co.,** Detroit.

Walter H. Gardner, 67, retired general sales manager of the **Keystone Steel & Wire Co.,** April 20, at his home.

E. M. Weinfurtner, 65, president of **North American Refractories Co.,** April 15th.

CHOOSE THE *RIGHT* LATCH TO DO THE JOB *BEST!*

SOUTHCO DOOR AND PANEL LATCHES

UNIQUE DESIGNS ASSURE LOW INSTALLED COST

FOR ECONOMY...
LONG LIFE...
EXTRA SALES APPEAL...

Here's a variety of rugged, smooth-operating door fasteners designed for countless applications where both economy and smart appearance are important.

Built for long life, SOUTHCO latches hold panels and other closures *pressure tight* to resist vibration and keep out dust . . . despite variations in door and frame thicknesses.

For speedy, uncomplicated installation, using a minimum of parts and requiring fewest possible tools, SOUTHCO latches are unexcelled.



UNIVERSAL CABINET LATCH

For extra fast installation on all sheet metal doors. No welds, bolts, screws, or rivets needed. Adjustable to any grip length. Brightly finished knob and plated washer make this an appealing fastener for smart appearing cabinets.



ADJUSTABLE PAWL FASTENER

Automatically adjusts, by a turn of the knob, to various door or frame thicknesses. Preassembled for fastest installation. Knobs are brightly plated to improve appearance of equipment. Choice of three body sizes. Choice of pawls offers wide variety of adjustable grip lengths.



SLIDING LATCH

Seals door and frame together under pressure with just a turn of the knob. Permits easy alignment, smooth operation. No part of latch is inside door. Appearance is suitable for the best finished products. Also an inside model with only locking screw visible.

Which of these SOUTHCO latches can serve you best? Write us for full information. Southco Division, South Chester Corporation, 238 Industrial Highway, Lester, Pa.

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ARROWHEAD PANEL LATCH

Ideal for slide-out drawers, removable or hinged panels. Locks or opens quickly with a quarter turn. Holds doors shut under spring tension. Uses minimum inside space.



DOOR LATCH

Meets the need for a low-budget fastener for control boxes, machinery, hot water heaters, and other light gauge sheet metal closures for home or industrial use. Just two simple parts, installed in seconds *with only a pair of pliers*. No striker plate needed. Also available in a screwdriver operated model.

SOUTHCO FASTENERS

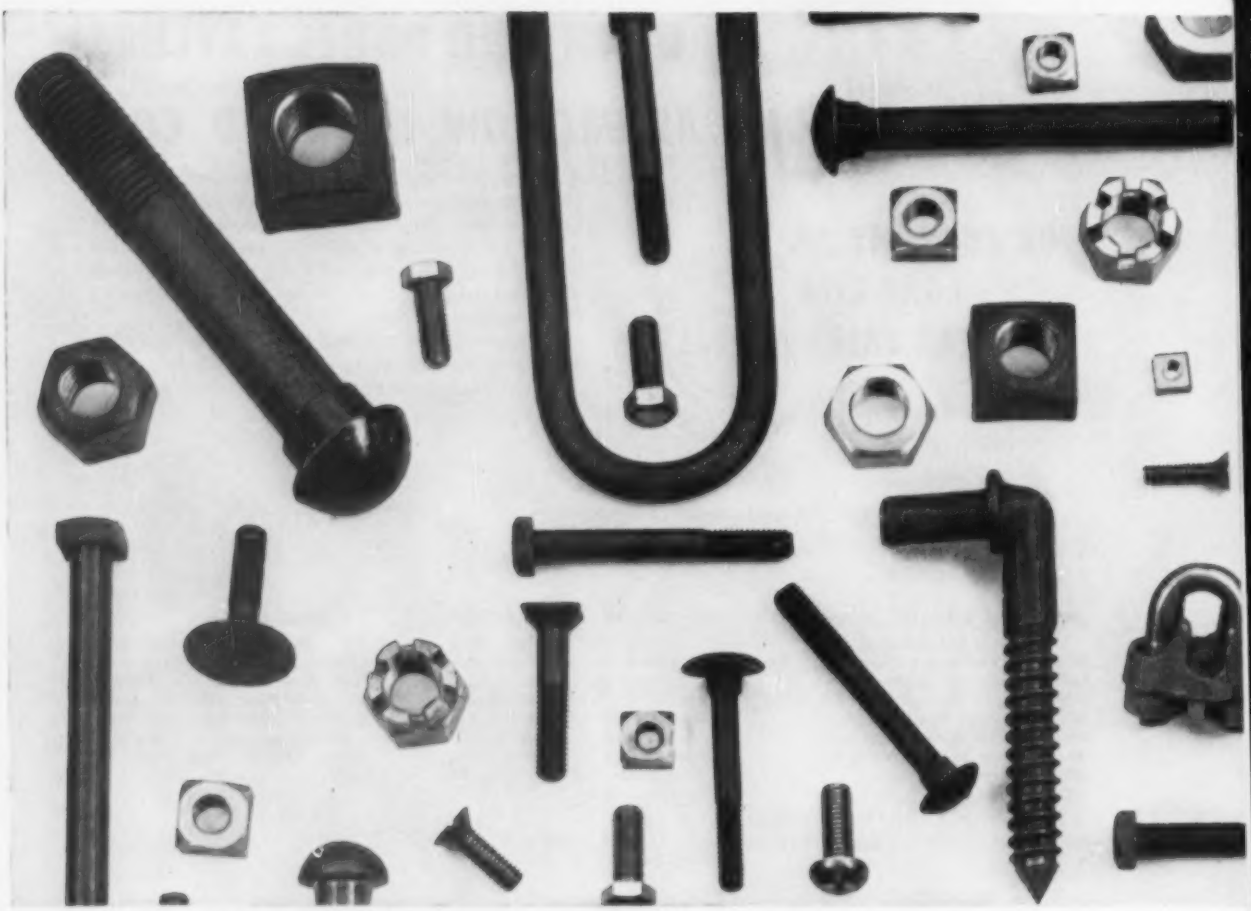
PAWL • SCREW AND SPRING • DRIVE RIVETS • ANCHOR NUTS • ENGINEERED SPECIALTIES

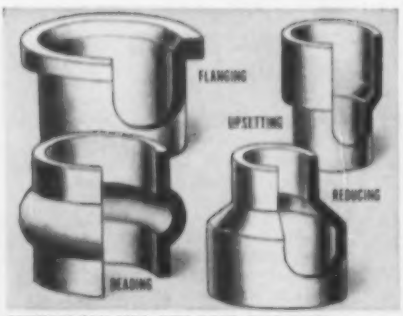
OFFICES IN PRINCIPAL CITIES

WHEREVER TWO OR MORE PARTS ARE FASTENED TOGETHER, STANDARD AND SPECIAL DESIGNS FOR IMPROVED PERFORMANCE AND LOWER PRODUCTION COSTS

SELECT THE FASTENERS

...from more than 20,000 types and sizes

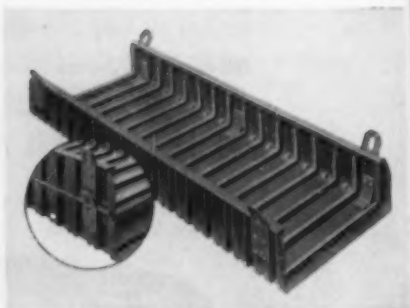




REPUBLIC CAN HELP KEEP YOUR TUBE FABRICATING COSTS DOWN. Operations shown above are only a few of the many Republic's Steel and Tubes Division can perform. Republic can prefabricate your individual parts or complete assemblies from either carbon or stainless steel tubing. You save the cost of new equipment and valuable plant space. And you get a precision job on a production basis.



REPUBLIC ENDURO STAINLESS STEEL TRIMS COSTS for manufacturer of commercial refrigeration cabinets. C. V. Hill Co. eliminated a burnishing operation and saved 3 cents a foot when they switched to ENDURO strip, No. 2 finish, for cabinet trim. There's no surface to flake or peel. Nothing to tarnish. ENDURO is solid stainless steel. Republic makes ENDURO in all commercial forms and finishes and will show you how to use it to best advantage in your product or process.



REPUBLIC BAR CARRIER SIMPLIFIES HANDLING of bars, pipe, tubing or other materials with lengths longer than the carrier. This P-135 Unit is equipped with lifting lugs for crane handling and can be tiered to any practical height. Open-end design permits easy removal of material from any unit in the tier. This is one item in the complete line of Republic Materials Handling Equipment.

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You can get exactly the fasteners you need for assembly or maintenance work from this big selection. It includes everything from machine bolts, track bolts, cap screws, large and small rivets to hot and cold punched nuts, semi-finished nuts, sheet metal screws.

Republic's Bolt and Nut Division also produces over 8,000 special types and sizes of fasteners. They include high-strength structural bolts, mine roof bolts, "Nylok" nuts, automotive and railroad special items.

Republic headed and threaded products are always uniform, easy to assemble, tough and strong to withstand shock and vibration.

When you buy fasteners you're interested in quality, uniformity, dependability, ease of application and long service life. You get them all in Republic Fasteners—plus prompt delivery.

On your next order specify Republic Fasteners. You can get them from your industrial distributor. If he doesn't have exactly what you need, he can get it in a hurry, because Republic makes and stocks more than 20,000 regular types and sizes. Mail the coupon for additional information.



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- ☐ ENDURO Stainless Steel
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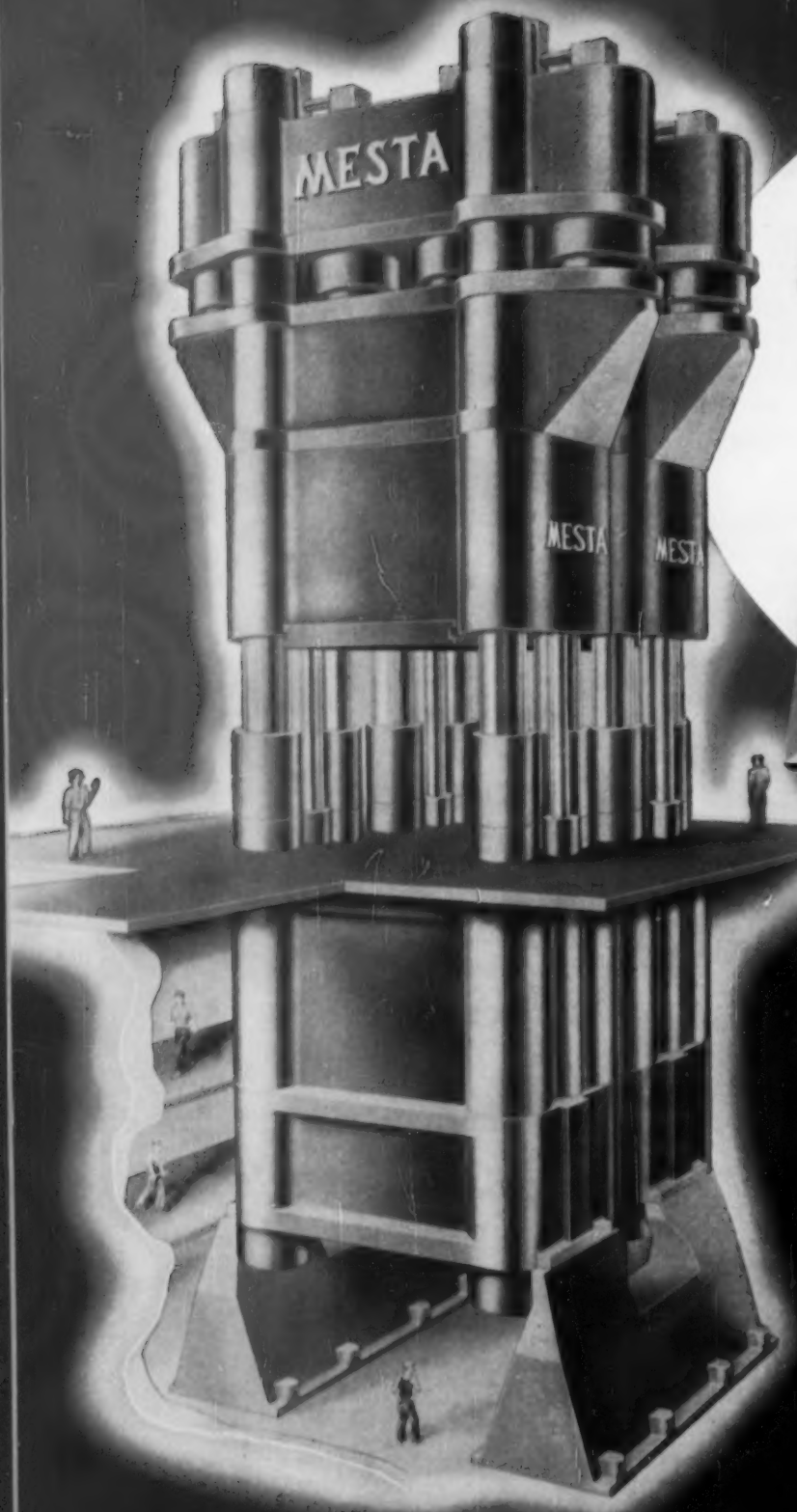
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K-8414



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Designed and Built by
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This giant
Hydraulic Closed-Die
Forging Press exerts a
forging pressure of
50,000 Tons
to produce aluminum
and magnesium alloy
components for
modern aircraft
of all types
and will help the
USAF maintain our
air supremacy

Designers and Builders of Equipment for the Ferrous and Non-Ferrous Industries

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

The Iron Age
FOUNDED 1855
TECHNICAL ARTICLES

Lights up defects—

Magnetic Particle Technique Makes Billet Inspection Positive and Efficient

STEEL INSPECTION begins with delivery of order of billets onto ramp which feeds magnetic unit.



◆ Billet inspection, using magnetized particles and ultraviolet light to detect flaws, has a number of benefits—in time, costs and labor . . . Probably the most important is the better quality and fewer rejects in finished products.

◆ Pickling has been eliminated entirely . . . Far less handling is now required, and the processing rate has been stepped up considerably—with fewer men . . . The system is positive, efficient and economical.

By O. G. SMITH
Chief Inspector,
Steel Div.,
Timken Roller Bearing Co.,
Canton, Ohio

• BETTER PRODUCT QUALITY begins with high quality billets. It was on this basis that the management at Timken Roller Bearing Co., Canton, Ohio decided to install new inspection facilities for detecting cracks, seams, tears and other flaws in billets. The semiautomatic Magnaglo inspection unit is probably the first of its kind for 100 pct inspection of steel in the billet stage.

At one time most tube mill billets were pickled, inspected, then conditioned in the bar conditioning department. Between operations, there was considerable handling. With the new inspection setup, pickling has been eliminated entirely, handling has been reduced substantially and the yield in finished tubing 2 to 3 pct higher.

Billets range in size from about 4 to 8 in. in diameter and as much as 12 ft long. They are loaded onto a ramp by a fork lift truck and lie there in log-like fashion until they are to be inspected. A large shaker jostles the billets to prevent jamming. A set of primary stopping blocks prevents them from pouring into the inspection area.

An escapement mechanism, controlled by the inspector, allows three or four billets to roll into a second loading area. A second escapement mechanism, also controlled by the inspector, rolls the billets into the inspection unit one at a time. As the billet rests on a series of rollers, a magnetizing tailstock, traveling on a monorail track, contacts the billet and drives it into a headstock contact. Practically no adjustments are necessary for variations either in length or diameter of the billets.

The billets are magnetized with circular magnetism by a heavy-duty power pack having a capacity of 5000 amp. It has a 2000-amp continuous charge capacity. Magnetization of the billet takes place directly under a 2-in. diam pipe with ¼-in. nozzles. Through it pours a continuous Magnaglo bath which is pumped onto the billet. After the billet is completely wetted, it is ejected from the magnetizing station and rolled into the inspection station. Meanwhile, another billet rolls into the magnetizing station.

Billets rest on rollers

At the inspection station, the billet comes to rest on a set of revolving rollers. These permit the inspector to slowly rotate the billet at will for inspection of the entire surface. Above the rollers is a battery of ultraviolet lamps which emit light of a particular wave length. The "black light" causes defects to glow or fluoresce, making them easily detectable and inspection very positive. After marking the defects, the inspector sends the billet either to the right or left to one of two manual scarfing stations by simply lowering the inspection rolls.

Scarfing is done with an oxyacetylene torch



BILLETS ROLL into magnetization unit for showering with water-suspended magnetic particles.



ULTRAVIOLET light causes defects to glow or fluoresce, making inspection very positive.

from a platform over a scarfing bed. Here, too, the scarfer can rotate the billet at will, making all defects readily accessible. After scarfing, the billet is rolled out onto a discharge bed. Billets are later moved by fork lift truck either directly to the piercing mill furnace or stored in the ready yard.

The inspection unit is located adjacent to one of the piercing mills. The schedule of the inspection unit is integrated with the mill schedule. Lead time between the bar mill and piercing mill has been drastically reduced, thereby cutting down the delivery time on orders.

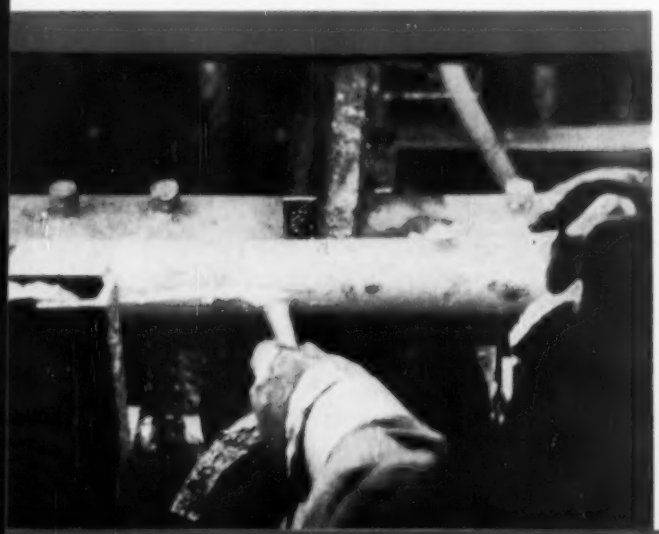
Originally, the magnetic particles were suspended in a vehicle of oil. However, oil created a fire hazard which rendered its use impractical. Later, water was used as a suspending agent and proved to be more economical. But this too had certain disadvantages in that the water would freeze in very cold weather. To prevent this, at least temporarily, anti-freeze was added to the solution. Burners were later installed under the charging bed to heat the billets sufficiently to eliminate freezing of the solution. The burners also melted snow or ice which accumulated on billets stored in outdcor areas.

Scarf defective areas only

Prior to establishing this practice a portion of the billets were skin scarfed. Now, only the defective areas are scarfed, none skin scarfed, saving substantially on the amount of metal removed. The system also speeds processing in ways other than through reduced handling. The material costs, time and labor for pickling have been eliminated entirely, and inspection and scarfing have been stepped up to an approximate rate of 100 billets per hour. Moreover, the increased production rate is achieved with only three men instead of seven to eight formerly.

Probably the most important advantage is the more thorough inspection of steel made possible by the Magnaglo unit. It is difficult to ascertain the value of direct benefits resulting from the higher quality of steel furnished to the mill. It is certain, however, that the increased tube mill yield is at least partially attributed to the better inspection method.

Since there was no prototype for this setup, Timken personnel designed and built the unit. The Magnaflux Corp., Chicago, supplied the electrical components for magnetization and acted in an advisory capacity in the engineering design stages. With the thousands of tons of steel processed annually at Timken, the Magnaglo setup has achieved considerable savings in inspection and handling costs.



Left: MAGNETIC particles build up around flaws and enable inspector to spot them quickly.



ONE OF TWO operators removes defects by scarfing. Billets then roll onto discharge ramp.

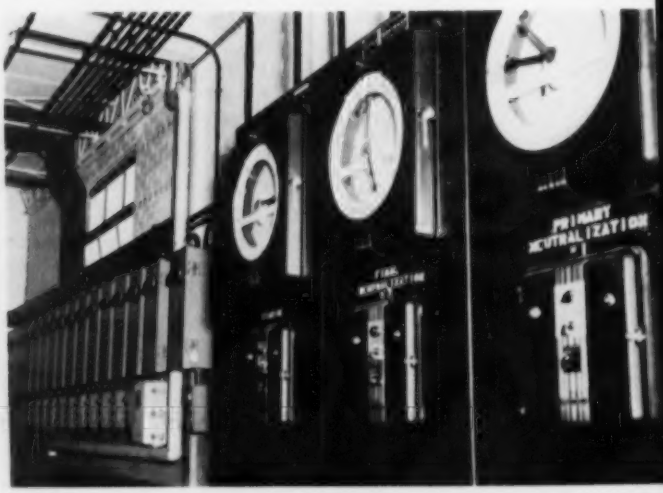
On continuous basis—

Dual Disposal System Fully Neutralizes Plating Wastes

◆ The first fully automatic waste disposal system in the automobile industry is being used by Cadillac Div. to destroy cyanide and neutralize acid-alkali waste . . . Wastes from acids, alkali and cyanide plating and metal stripping operations are treated.

◆ An elaborate system of automatic controllers, alarms and pumps was built into the waste treatment system to insure continuous trouble-free operation . . . Automatic recorders provide continuous records of all discharged effluent.

By W. G. PATTON, Asst. Technical Editor



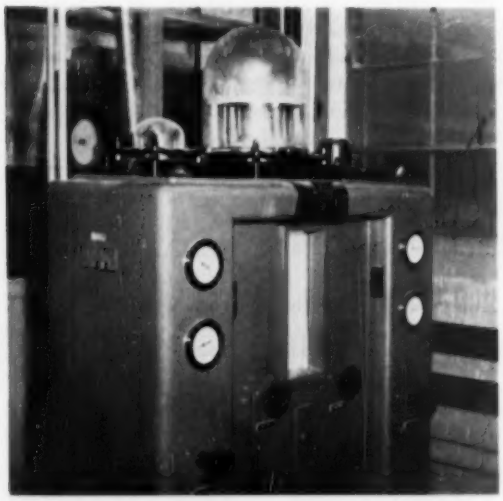
AUTOMATIC recording instruments provide a continuous record of discharged effluent.

A FULLY AUTOMATIC system for controlling waste disposal has been included in Cadillac Motor Car Div.'s greatly expanded plating plant. In addition to destroying cyanides, the new system provides for fully automatic neutralizing of acid and alkali waste.

The dual system permits automatic sampling and automatic chlorine injection to destroy cyanides on a continuous basis. Another fully automatic system holds final concentration of acid-alkali wastes at a neutral range for discharge into the city sewer.

The system for converting cyanides to cyanates meets all City of Detroit waste disposal requirements and provides a continuous record as to effectiveness of treatment of solutions being dumped into the city's sewer system.

Both the cyanide system and the neutralization method for treating acid and alkali solutions are



SAMPLING PUMP takes samples from the chlorine reduction chamber and carries the solution to an O-R-P recording and controlling cell.

housed in a new waste treatment building located across the street from the Cadillac plating plant. The dual system was designed by Frederick B. Stevens, Inc., working in cooperation with Cadillac plating engineers.

The new virtually continuous method of destroying cyanides replaces a batch-type process for treating waste solutions with hypochlorite. Previously, neutralization of acid-alkali wastes was also a manual operation.

In designing the new disposal system, Stevens engineers made provision for carrying cyanide treatment operations still further in the event of future changes in waste disposal regulations. Provisions have been made to provide further treatment to convert cyanides to CO_2 and water, if this should become necessary.

In the new Cadillac waste disposal setup, waste from two Stevens automatic zinc barrel machines and a Stevens automatic zinc rack machine are carried by continuous gravity flow to an interceptor tank located in the plating building. Waste solutions are pumped intermittently from this tank across the street to the new Cadillac waste treatment building.

Cyanide waste is pumped into a treatment system consisting of 3 tanks in series.

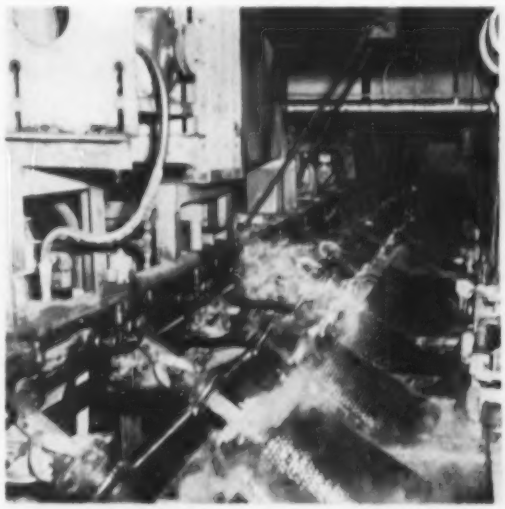
Capacity of these holding tanks is approximately 10,000 gal each. The first and second tanks are used for equalizing and holding only. Mixers 30 in. in diam are provided in each holding tank. The waste solution underflows from one tank to the next, finally reaching the third tank which has a reaction chamber where the desired amount of chlorine is injected.

A sampling pump takes a sample from this chlorine reaction chamber and carries the solution to an O-R-P (Oxidation-Reduction-Potential) recording and controlling cell. This determines the balance between cyanides and chlorine. The flow of chlorine to the reaction chamber is provided automatically. pH of the solution at this stage in the process is maintained constantly by automatic controls in the range 8.5 to 10.0.

If additional caustic is required to maintain the pH range of the solution, controlling and recording instruments determine the amount.

Tank No. 3 is also provided with a 30 in. mixer and an overflow to the city sewage system. A sample of the solution is taken at this point, and passed through an O-R-P recorder. This instrument provides a reading on a chart which serves as a permanent record of effectiveness of treatment of waste leaving the tank.

The primary chlorine feed system includes an air-operated Wallace & Tiernan chlorinator with



WASTE from two automatic zinc barrel plating machines are carried by continuous gravity flow to interceptor tank in plating building.

"The chlorinator is fed by an electrically-heated chlorine evaporator . . ."

a controlled volume feed and a chlorine injector. Capacity of the chlorinator is 2000 lb. in 24 hr.

The chlorinator is fed by an electrically-heated chlorine evaporator. Liquid chlorine supply comes from 5, 1-ton capacity chlorine storage cylinders.

Alarm system gives warning

The central alarm system is installed to provide warning should any of the following situations occur—(1) Failure of the primary or final O-R-P control system, (2) chlorine temperature falling below the desired level, (3) chlorine pressure dropping below the required minimum.

In contrast to the continuous treatment of cyanides the acid-alkali wastes are pumped intermittently out of an inceptor tank into holding tanks, located in the treatment building. These waste solutions from plating and stripping operations are accumulated in their respective tanks until sufficient volume is on hand to permit continuous neutralization discharge to city sewers. Air agitation of waste in the holding tanks is provided by a Spencer Turbo blower. A 40 hp motor drives the blower. This prevents stratification of the solution.

As in the case of the cyanide treatment system, an automatic primary pH control setup is provided. This equipment consists of a Leeds and Northrup recorder controller, electrode and conoflo proportioning valve which provides the control for the proper chemical feed.

The control equipment is set to maintain a pH rating of 1 to 2 before overflowing into the secondary neutralization tank where further caustic is added as needed automatically to bring the effluent to the neutral point permitting discharge to the city sewer system. Control of the second neutralization tank is provided by an additional L & N recorder-controller which, in addition, provides a record of effluent being discharged.

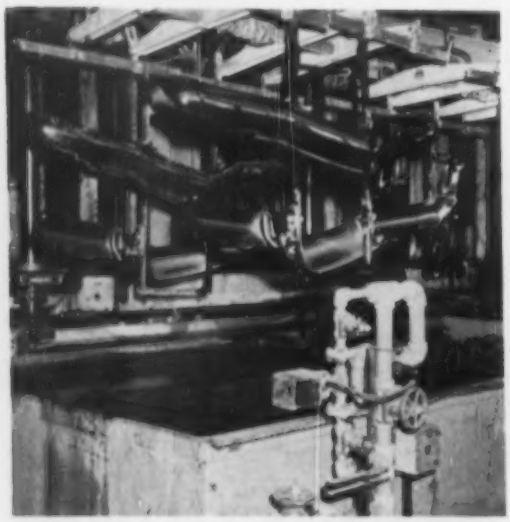
Rubber-lined mixers are used to provide solution agitation in primary and secondary neutralization tanks. In effect, the broad neutralizing operation takes place in tank No. 1; final neutralization is brought about in tank No. 2.

Additional holding tanks for the storage of new acid and caustic solutions have been installed to provide emergency treatment should the dumping schedules of the processing equipment be such that a shortage of either acid or alkali waste occur to permit complete neutralization.

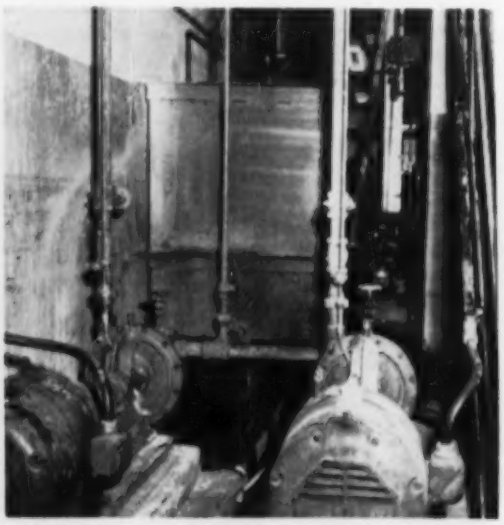
A central alarm sound system is also provided for the acid-alkali waste treatment system. Should the pH balance vary from controller settings, Warrick level indicators are also provided for each tank in the system. Colored lights show the level of the solution in each tank.

Acid pumps are stainless

All acid tanks used are concrete, coated with mastic and lined with acid resistant brick. Acid transfer lines are Uscolite plastic pipe and all acid pumps are stainless steel.



ACID and alkali waste from the bumper plating line is treated by the dual disposal system.



CYANIDE waste is pumped into system of 3 tanks in series. Tank capacity is 10,000 gal each.

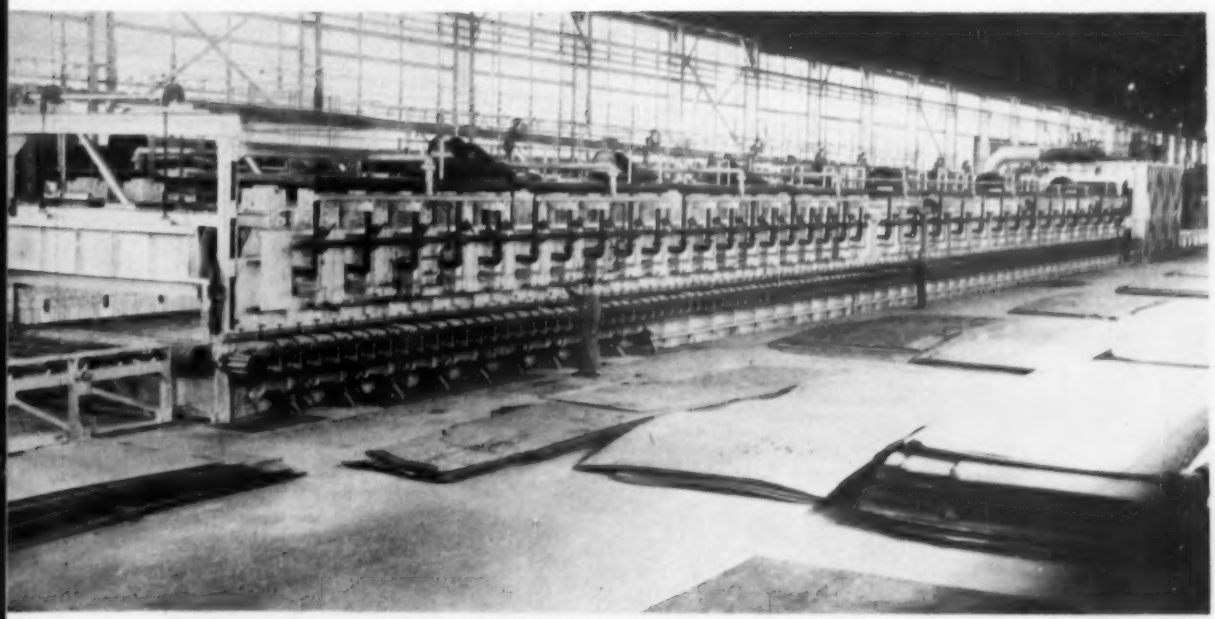
Press quenched plate—

Wide Steel Plate Continuously Heat Treated On New Integrated Line

◆ Continuous heat treating of wide steel plate on a new integrated furnace and quench press line has given Lukens Steel Co. a new high efficiency in heat treating operations . . . The line handles plate to 130-in. wide and 40-ft long on a continuous basis.

◆ Use of major materials handling devices has reduced the overall time required in heat treating operations . . . Elimination of heat treating production problems has simplified maintenance of high plate quality.

By W. D. LATIANO, Metallurgical Editor



ROLLER HEARTH continuous furnace heat treats large plates with minimum handling.

◆ WIDE STEEL PLATE is continuously heat treated—with major gains in operating efficiency—on a new 354 ft furnace and press quench line recently installed at Lukens Steel Co. The integrated line at the Coatesville Pa., plant handles plate to 130 in. wide, 40 ft long, and from 3/16 to 2 in. thick. Problems of heat treating the large plates have been considerably simplified. Reductions in costs and in time required to process plates through heat treating have been gained. The problems of maintaining quality have been simplified.

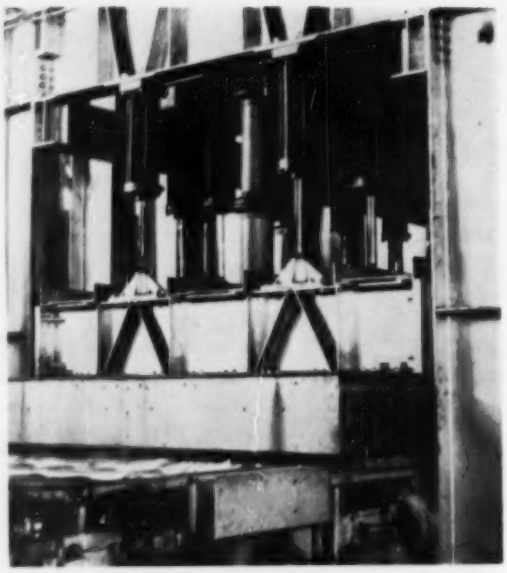
Use standard components

Lukens, which manufactures a variety of plate and plate products, is able to handle several heat treating operations on the new line. These include hardening, drawing, normalizing, annealing and spray quenching. Armor plate is heated and spray quenched and then processed through the same line for tempering. Austenitic stainless grades are heat treated and many grades of straight carbon steels are normalized in this equipment. Stainless clad plate as well as the new T1 steel is also processed in this line.

The unusual heat treating line designed and built by the Drever Co., Philadelphia, in cooperation with Lukens engineers incorporates a number of new developments. One of its chief advantages from a maintenance standpoint, is the wide use of standard component equipment parts.

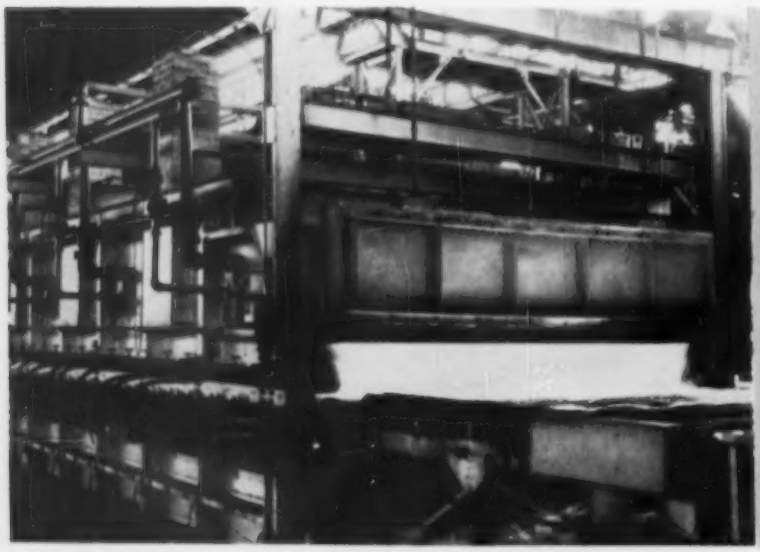
The line consists of five major pieces of equipment: A 50 ft charging table, a 202 ft direct fired furnace, a 10 ft transfer table, a 42 ft quench press, and a 50 ft discharge table. These are mechanically and electrically integrated so that one man has complete control of the operation.

The charging table is equipped with driven rollers at hearth level. Plates are loaded on the table and charged into the furnace. The furnace for heating the plates is 202 ft long. It is direct fired by Bloom Engineering tempered flame burners that use either natural gas or number two fuel oil. At present only natural gas is used but Lukens has on hand 500,000 gal of oil for reserve use.



QUENCH PRESS can apply 1000 tons pressure to the plates during quenching if necessary.

Burners are of the type that allow excess use of air. Automatic control of these burners permits a wide range of temperatures. The working temperature range of the furnace is between 900° and 2000°F. Ninety burners are used in the furnace. All but twenty are uniformly spaced above the rollers across the length of the furnace. Twenty additional burners are placed below the rollers in the first two zones. This allows greater heat input at the furnace entrance where cold work is encountered.



PLATES TRAVEL from the exit end of the furnace to the quench press at speeds up to 125 fpm. A clutch arrangement at discharge end permits fast delivery of plates to the quenching unit.

The side walls are of 9 in. insulating 2600°F brick plus 4½ in. of 2300°F insulating brick and 1½ in. insulating block. The entire 202 ft roof is of 9 in. rammed plastic refractory backed by 2 in. of insulating block. Doors at both ends of the furnace are lined with castable refractory. The furnace bottom is made up of 4½ in. firebrick plus 5 in. of 2600°F insulating brick and another 5 in. of 2300°F insulation brick.

Uniform heat is maintained by spacing of burners about 30 in. above the rollers and, in the first two zones, the additional burners are 14 in. below the rollers. These are staggered on opposite sides of the furnace. Burner turbulence permits a more uniform distribution of heat especially at lower temperatures. Excess air used in the burners at the lower temperatures acts much in the manner of convected air and permits uniform temperatures in this range. Flues in the furnace roof are specially designed to help maintain uniform heat distribution in the higher temperature ranges.

Develop new-type rollers

Of the many problems overcome in the building of this large continuous furnace probably the most difficult was the designing and building of rollers. In this effort Drever engineers came up with a new type roller that is proving itself in service.

Plates are conveyed through the furnace on 14 in. diam rollers spaced on 16 in. centers. Each roller is made up of seven cylindrical sections of silicon carbide. Sections are held together by cast heat resisting alloy end bells that are spring loaded from one end.

Each roll is assembled as a self-contained unit. Axial forces are transmitted by a central tension member consisting of 2 in. OD water cooled steel pipe. The space between the pipe and inside diameter of the silicon carbide roll is filled with high temperature castable refractory material. Cooling of the rolls is accomplished by passing water through the center pipe of the 155 rolls at 6.5 gpm per roll or a total of 1000 gpm. At this rate of flow the average rise of temperature of the water is 15 degrees when the furnace is operating at 1950°F. The water is recirculated through a reservoir for cooling.

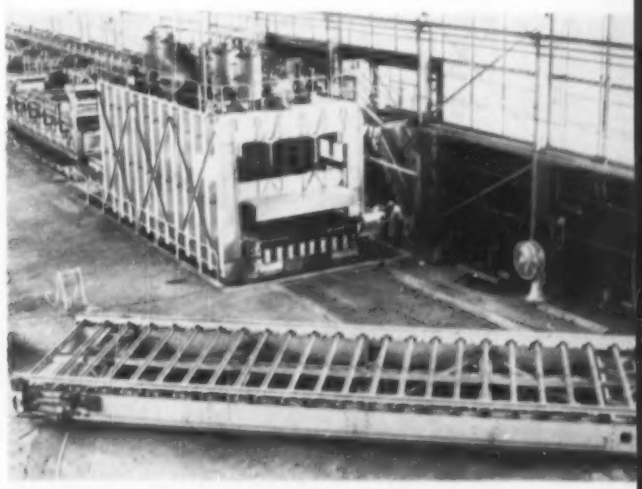
Each roll is mounted on anti-friction pillow blocks which are supported by the framework of the furnace. To permit easy replacement of rolls, the furnace section around and below each roll is built so that it can be quickly removed when the need arises.

Rolls are chain driven, the chain being engaged with a sprocket keyed to one end of each roll. The drive is arranged in four sections so as to reduce stress on the chain. Three sections are approximately 55 ft long and one section at the discharge end is 40 ft long. Driving force is applied to the chain through individual reduction units for each section. All sections are synchronized to avoid scratching of the work.

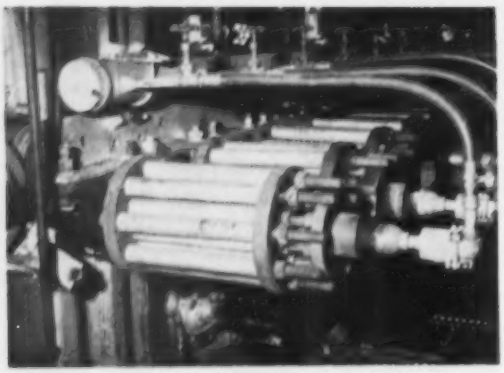
The discharge section of the furnace is normally synchronized with the other sections except when discharging the plate to the quench press. This section is disconnected by a clutch arrangement and speeded up to a delivery speed of 125 fpm permitting fast runout to the quenching unit. Speeds can be varied so that furnace time for plates can range from 10 minutes to 12 hours depending on the size of the plate and the heat treatment required.

Between the furnace and the quench press, the line is serviced by a 10 ft long transfer table. Table rolls are of mild steel 6 in. in diam. They are chain driven at speeds and in the same manner as the discharge section of the furnace.

The quench press is 42 ft long and will accommodate up to 130 in. wide plates and can apply 1000 tons pressure. The bottom platen is stationary and the upper platen is movable with



TURNTABLE, operated from the control pulpit turns plate 90° for processing through descaler.



SPRING LOADING compensates for expansion in silicon carbide rolls due to furnace heat.



TELEVISION provides view of line exit. Telephone connects operator with entry end of furnace.

a maximum distance at the open position of 24 in. The movable platen is pressed down by the action of 26 hydraulic cylinders with eight additional used at various points as equalizers. Four pullback cylinders are mounted above the movable platen for opening the press.

A set of 6 in. diam mild steel rolls is located in the bottom platen. The rolls can be lowered into the platen, leaving the work on the platen for quenching. After quenching, the rolls are raised for discharge of the plates. The roll drive is reversible for positioning the plate under the press.

The platens are of cast steel. The platen surface consists of a series of grids machined from the steel casting. During quenching the plate rests on the grids. Spaces between the grids allow escape of steam and scale. Removable water pipes are located in the platens so that water spray is directed against the work during quenching. The water from the quench and the roll cooling is collected in a basin under the quench press and returned to a 5,000,000 gal reservoir for reuse.

The quenching operation is controlled from the pulpit as are all of the operations in the line. The quenching unit is divided into four sections, each 10 ft long and the width of the platen. The operator can control any section separately or, with a common push button, can operate all sections simultaneously. Automatic timers and suitable shut off controls are also provided.

Gould centrifugal pumps are used to supply water to the quenching sections at the maximum rate of 16,000 gpm at 85 ft head. Water for the hydraulic system is supplied at 1600 psi. The 24 in. opening of the press can be closed in 15 seconds.

A 50 ft roller table serves both as discharge runout table and as a turntable. Rolls are chain driven and are reversible. They are of mild steel and are 6 in. in diam. Because the descaling and pickling facilities are at right angles to the direction of travel through the furnace it is necessary to turn the plates 90° after they are discharged from the quench press for easier crane service. To accomplish this, the discharge table is mounted on a pivot at the end away from the quench unit and turns 90° on a single curved rail on the end nearest the quench press.

Travel of the table is controlled by limit switches. Because the arc that the table travels is not visible to the operator, a television camera is spotted so the table area is always in view on a television screen in the operator's pulpit.

All heating operations are controlled by Brown Air-O-Line recording controllers. Burners are operated with Conoflow springless air motors. Pilot burners are located at each burner and additional safety is assured with Maxon manual reset safety valves. The system is set up in such a manner that if power, air or fuel failure occurs the whole system is closed and manual resetting is necessary to resume operation.

Production at present is 46,000 lb per hour for solid stainless steel plate heated and quenched 5/16 in. thick, 40 ft long and 108 in. wide. One plate can be quenched every 6 to 10 minutes. Armor plate 2 in. thick by 130 in. wide can be hardened at the rate of 50,000 lb per hour. Tempering of these plates is accomplished at the rate of approximately 33,000 lb per hour.

Simplify uniformity problem

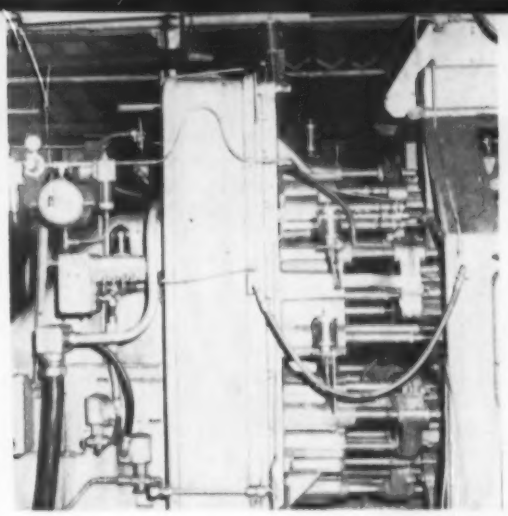
An order of armor plate can be hardened in this furnace, then the furnace temperature is dropped to drawing temperature as low as 900°F and the same plates are put through the furnace to complete the heat treating cycle.

Use of the continuous line has simplified the task of obtaining uniformity in heat treating operations, Lukens has found. This in turn has eliminated many production problems involved in heat treating of quality plate.

Extensive use of mechanical handling permits higher and more economical production. The operation is safer and a better utilization of floor space has been achieved.



GEAR case loading and unloading station is one of seven on this multiple drilling machine.



COOLANT from tank at left sprays through a reamer, aids better finish, blows chips away.

Multiple Drilling Unit Combines Five Setups

◆ SMALL CAST IRON gear cases for domestic washing machines are produced in huge volume by Whirlpool Corp., St. Joseph, Mich. Until recently, it required five separate machines, each with its own operator, to produce 19 holes in this casting and to perform supplementary operations on them.

These same operations, with only slight variations, are now performed on a single Natco multiple drilling machine equipped with a seven-place indexing fixture of the trunnion type. One man operates the machine and does all loading and unloading.

Machine has four slides

Of the 19 holes drilled by the new machine, 13 are located in the peripheral flange of the gear case and the remainder are in the case itself. Two of the case holes are drilled from the side and are parallel to the plane of the peripheral flange.

In performing supplementary operations on the drilled holes, the machine spot faces 5 of them, chamfers a total of 12, taps 8 of them (some from both sides), and reams 5, some twice.

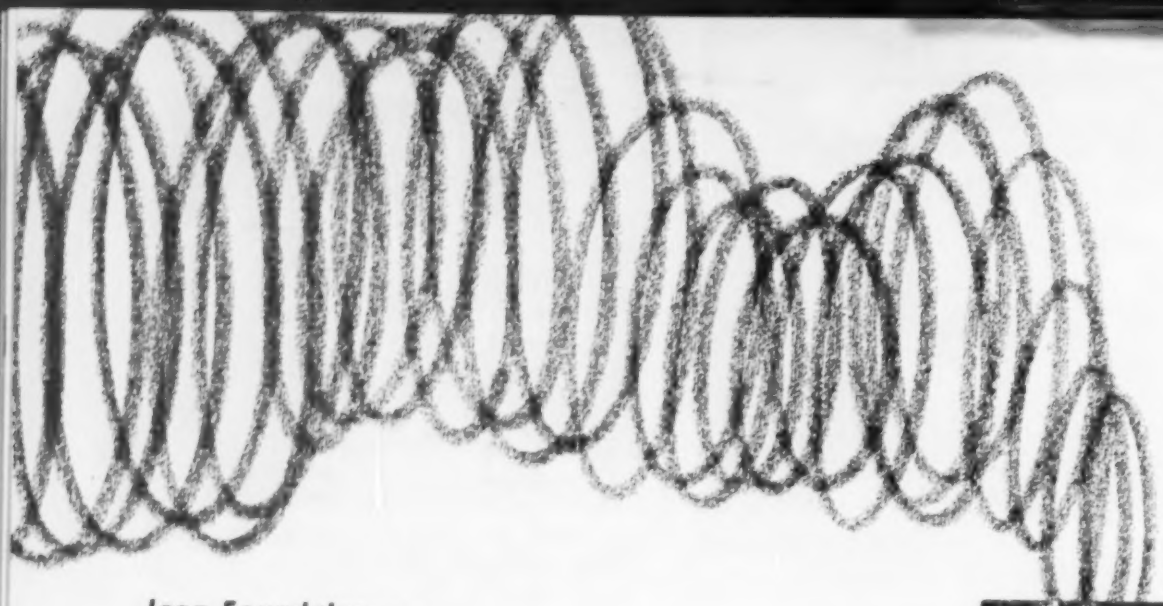
Most of the tools are in line with the machine's trunnion axis. But tools working parallel to the case flange are at right angles to the trunnion axis and operate at the top of the turret, whose plane is vertical. The machine has two horizontal slides, one vertical slide and one at an angle.

Loading and unloading are done by hand at a station on the side of the trunnion. Gear cases then index to successive stations among which the several operations are divided.

Some holes are drilled into gear case bosses for bearing purposes. This necessitates reaming, and some of it is done twice to obtain the required finish. With one exception, reaming cuts are made dry. The exception is on a hole where the finish must be 25 micro inches or better.

To obtain the necessary finish on this one hole, the shop uses Petron coolant-lubricant. This is vapor-sprayed through an axial hole in the carbide tipped reamer. The coolant is fed from a small tank and spray-pressure is supplied by the shop air line. Feeding is timed so that the spray enters the hole during the cut and during tool retraction. This tends to blow chips away.

The new production setup not only improves machining quality but the large labor savings will soon amortize the investment required.



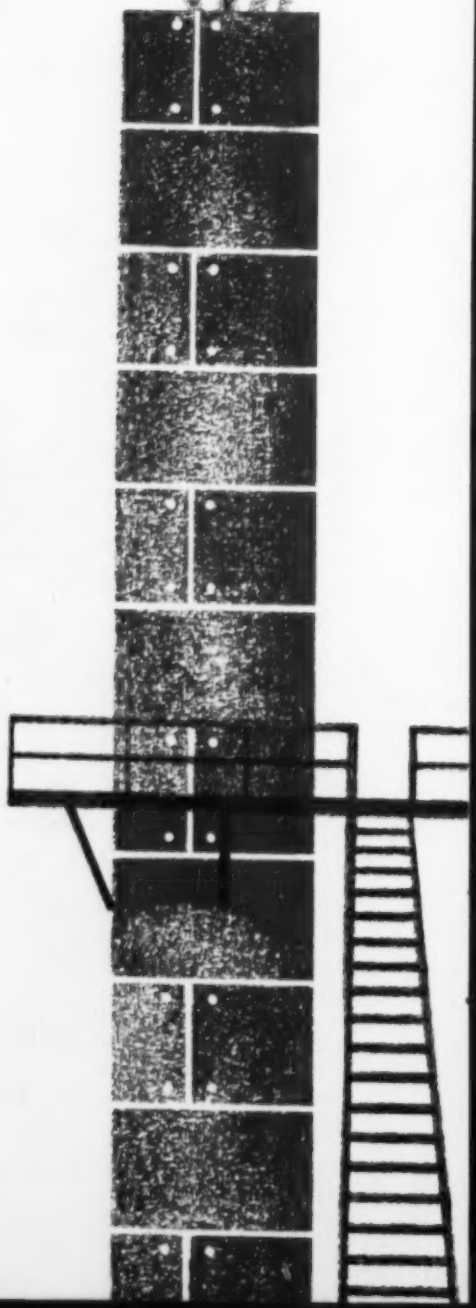
Iron Foundries—

Air Pollution: Furnace Types and Sizes Dictate Most Effective Controls

By N. R. SHAFFER, Engineer,
and M. A. BROWER, Technical Assistant
Air Pollution Control District
Los Angeles County, Calif.

• Uncontrolled emissions of dust and fume from gray iron cupolas can add significantly to community "smog" problems . . . But with proper control methods this type of atmospheric contamination can be reduced by more than 95 pct.

• Ferrous foundries in the Los Angeles area have complied with control regulations in various ways . . . Some use baghouses or electrical precipitators, others have abandoned cupolas for reverberatory or electric furnaces.



◆ GRAY IRON foundry operation in Los Angeles County until 1948 was carried on in almost exactly the same manner as it had been for centuries. Most foundries used cupola furnaces with all dusts and fumes discharged directly to the atmosphere.

Today, in Los Angeles County, every foundry still using gray iron cupolas has them vented to a baghouse or electrical precipitator. Others have substituted reverberatory or electric furnaces. The result is that 6.05 tons of dusts and fumes are kept from entering the atmosphere daily while only 0.25 tons of pollution go into the air—a reduction of 96 pct.

In 1948, 79 uncontrolled cupolas were in use in the County. In that year two regulations were passed in an effort to reduce atmosphere pollution.

One restricted opacity of emissions to less than 40 pct for periods exceeding three minutes in any one hour. The second regulated emissions of dusts and fumes by pounds per hour depending on the amount of material charged to a process. Dilution at point of discharge did not comply with the law.

In Los Angeles County at this time there are 48 foundries operating 52 cupolas and pouring 800 tons per day of iron; 13 foundries using 21 reverberatory furnaces and melting 147 tons per day; and 5 foundries with 12 electric furnaces melting 27 tons per day. With no control, emissions to the atmosphere from all of this foundry equipment would be 6.30 tons per day, Table I.

Tests on controlled cupolas show that baghouses have efficiencies ranging from 98 to 99 pct while electrical precipitators show efficiencies of 91 to 97 pct, Table II.

Before control of the cupolas could be achieved, it was important for foundries to know exactly what had to be controlled. Solids in a cupola emission were found to vary in concentration from 0.413 g per cu ft for a hot blast cupola to 1.81 g per cu ft for a standard cupola.

Expressed in pounds per ton of material charged, there is loss of 5.9 lb for every ton of material charged to a hot blast cupola and from 8.8 to 27.7 lb for every ton charged to a standard cupola.

An average of all tests made by the District shows that 14.8 lb of dusts and fumes would be emitted to the atmosphere for each ton of material charged to a gray iron cupola.

From the foregoing, it can be seen that high efficiency control equipment is required.

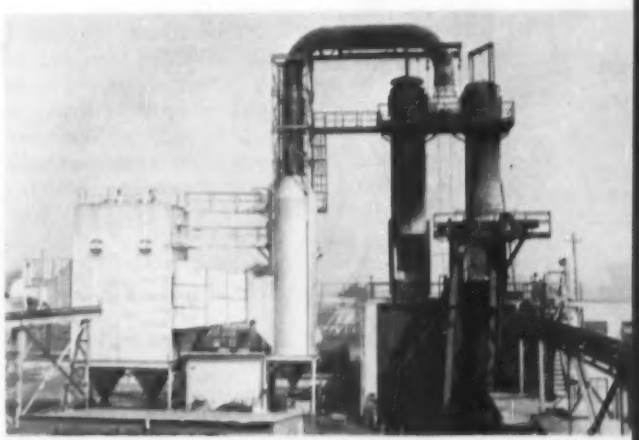
Two more problems had to be considered before cupolas could be controlled. These were the temperature and condition of the gas emitted.

Part I of this series, which discussed dust and fume control in steel mills, appeared in last week's issue. Part III, in next week's issue, will describe methods of air pollution control applicable to nonferrous foundries.

Right: BOTH of these gray iron cupolas are controlled by the electrical precipitator at the extreme left. Emissions go first to a quench tank for conditioning, then to precipitator.

Bottom Right: EMISSIONS from cupola at left are cooled in the radiation-convection towers and then go to the baghouse on the right for collection.

Below: THIS baghouse has a collection efficiency of 99 pct plus. Cupola gases are first cooled by a water quench tower—note steam emitted.



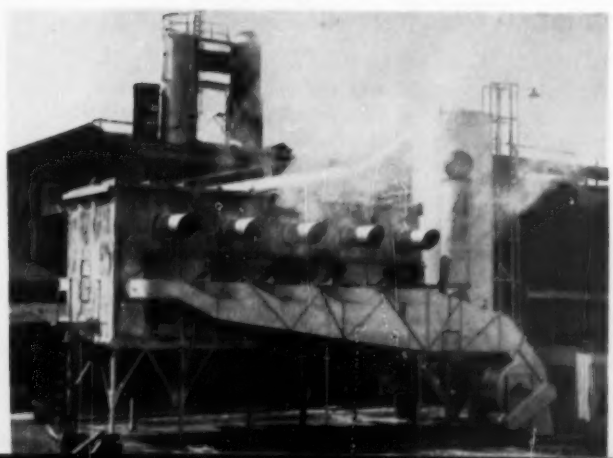




TABLE I | **Estimated Dust and Fume Loss Without Pollution Control**

Furnace Type	Size	Iron Melted, Tons per Day	Loss per Day, Tons
Cupolas	Less than 48 in. ID	442	2.84
Cupolas	48 in. to 60 in. ID	148	1.44
Cupolas	More than 60 in. ID	208	1.97
Reverberatory furnaces		147	0.01
Electric furnaces		27	0.025–.05
	Approx. total daily loss if no control		6.30 tons

TABLE II | **Estimated Dust and Fume Loss With Pollution Control**

Furnace Type	Control	Pct Efficiency	Loss, Tons per Day
Cupolas	Electrical precipitators	91–97	0.1
Cupolas	Baghouses	98–99	0.1
Reverberatory and electric furnaces	None		0.05
	Total daily loss with present controls		0.25 tons

When the exhaust dilution ratio is decreased for a control installation, the gas temperature is raised and temperatures from 1500-2200°F result. The effluent must therefore be cooled before it can be collected. The gaseous discharge is acidic when cooled and collected in the presence of moisture, due principally to the presence of sulfur compounds from coke consumed.

High efficiency cyclones showed an efficiency of only 22.5 pct on a test cupola while a standard dynamic water scrubber was only 38.2 pct efficient in controlling these emissions. This type of equipment failed to meet the strict control regulations.

In other cases, a venturi scrubber on one cupola had a collection efficiency of 7.3 pct while an impingement wet scrubber achieved 75.6 pct efficiency. The latter equipment has barely met the requirements of the Air Pollution Control District.

But the baghouse and electrical precipitator, with the aforementioned average efficiency of 96 pct, proved to be the solution to effective gray iron cupola control.

Cooling of the cupola gases has been handled by radiation and convection columns or by evaporation coolers. Both allow a reduction in temperature without excessive increases in the gas volumes to be handled by control equipment.

A foundry in Alhambra, Calif., controlled its standard 45-in. ID cupola with a cooling system and baghouse costing $45,000. The cupola uses an 8:1 iron coke ratio and the flue gas temperature varies from 1875-2150°F.

The gas is cooled by passing through 16 radiation and convection columns each 42 in. in diam and 42 ft high. This gives a cooling area of 10,980 sq ft. This system is unique in that 50 pct of the gases passed through the cooling columns are recirculated to the inlet duct of the cooling system.

This shock cools the gases from the cupola to 1100°F and makes it possible to use relatively inexpensive steel for the ductwork. The final discharge from the cooling system to the baghouse is at a temperature of only 400°F.

A tubular-type four-compartment baghouse at this foundry handles 13,100 cu ft of gas through 112 silicone-treated glass wool bags. Each bag is 11 in. in diam and 15 ft long, giving a 4835 sq ft total filter area. Bags are shaken manually each 90 minutes with each compartment being shut off from the gas flow during shaking operations.

Overall efficiency of this unit under normal operating conditions is greater than 99 pct.

A Pomona, California, gray iron foundry with two 56 in. ID cupolas chose an electrical precipitator for its control system. Initial installation cost for the precipitator and conditioning unit was $120,000. Only one cupola is in use at any given time and both are vented to the one precipitator.

Flue gases from the cupola, with temperatures ranging from 300-1600°F, are conditioned in an evaporative cooler. The cooling unit has a water rate of 20 gpm and brings the temperature down to 300°F. The cooler is 9 ft in diam and 44 ft long.

The electrical precipitator in this case is a perforated-plate, collection-electrode type with 13 ducts each 8¾ in. wide, 17½ ft high and 18 ft long. The total discharge electrode length is 5450 ft.

Maintenance is important

In using a precipitator for a gray iron cupola, gases must either enter the precipitator at a low temperature and high humidity or else be at or above 600°F. In this case, gases are 300°F and have a 14 pct minimum moisture content by volume. Efficiency of this control unit averages about 94 pct.

Instead of controlling their cupolas, some firms have replaced them with reverberatory or electric furnaces which do not require control devices. Emissions from a reverberatory furnace compare with those of a 96 pct controlled cupola.

Experience has shown that control installations, however expensive, cannot be installed and forgotten. Maintenance is important for bags and ductwork and changes in melting operation may change the type of emission that must be controlled.

Grinding Wheels: Dynamic Balancing Improves Accuracy, Lessens Vibration

◆ Closer accuracy, faster correction and lower handling costs are benefits gained by the Simonds Abrasive Co. in dynamically balancing grinding wheels . . . The single plane dynamic balancing machine operates on the principle of the electronic stroboscope.

◆ Straight vitrified wheels ranging from 6 to 14 in. diam, and 1/4 to 2 in. thick are dynamically balanced to slightly less than 1/16 oz on the face as compared with 1/8 oz with conventional methods.

By E. C. **BEAUDET**, Technical Editor



GRINDING WHEEL being placed on fixture of single plane dynamic balancing machine. Air-operated injection unit is shown center, unbalance is read on meter, right. Location of unbalance is shown on dial below operator's hands. Unit checks and corrects unbalance.

• WELL-BALANCED grinding wheels are an important factor in achieving good grinding finishes. With a finely balanced wheel less vibration is setup between the wheel and the work. As a result better surface finishes can be obtained. To keep vibrations caused by an improperly balanced wheel to a minimum, dynamic balancing is now being used for balancing wheels of various types and sizes.

At the Simonds Abrasive Co., Philadelphia, dynamic balancing of grinding wheels is being done on a production basis. Believed to be the first commercial application of the principle to abrasive wheels, dynamic balancing brings to Simonds closer balancing accuracy, faster unbalance correction and lower handling costs.

Wheels are balanced on a single plane dynamic balancing machine which operates on the principle of an electronic stroboscope. The machine achieves closer balancing accuracy by amplifying vibrations setup by a rotating uncorrected wheel and precisely determining the amount and location of unbalance. Unbalance correction is made on the wheel while still in the dynamic balancing machine until required balance condition is achieved.

This equipment makes possible the balancing of wheels of certain sizes to slightly less than 1/16 oz on the face as compared with ⅛ oz with conventional balancing methods. For special grinding operations, calling for extremely close limits, balancing tolerances as low as 1/32 oz on the face are possible.

Offers production savings

Dynamic balancing is used at Simonds Abrasive Co. only on straight vitrified wheels ranging from 6 to 14 in. in diam, and up to 2 in. thickness. Thicker or contoured wheels would introduce additional unbalance factors not compensated for in single plane balancing.

Resinoid wheels are not balanced dynamically since their less porous structure is unsuitable for correction by the method used in this equipment. Also, balance tolerances are not as critical in resinoid wheels since they are used mostly for rough stock removal rather than finishing operations.

Wheel sizes now being dynamically balanced at the Simonds plant are ¼, ½, ¾, 1, and 2 in. thick. These comprise about 85 to 90 pct of the wheel sizes produced in the ¼ to 2 in. range. Most are aluminum-oxide white grain wheels used in tool rooms for grinding milling cutters, broaches, lathes and planer tools where extremely close tolerances are desired. Some wheels for production applications such as horizontal surface grinding are also checked for balance on balance testing machines.

Dynamic balancing offers outstanding production economies since unbalance is determined and corrected in one handling operation on the machine. Formerly wheels had to be checked for unbalance in one operation, corrected by adding a wet slurry in another, loaded into an oven for drying, unloaded and rechecked again.

In a normal balancing correction cycle furnace time takes about one day and handling between balancing, correction, oven loading, unloading and rechecking takes another. On the dynamic balancing machine, balance testing and correction can be performed at a rate of 30 to 60 wheels per hour depending on the size of wheel.

In dynamic balancing the wheel is rotated in a horizontal plane on a vertically driven spindle. The unbalance location is determined by a stroboscopic lamp synchronized with vibration impulses sent out by the rotating wheel. Amount of unbalance is indicated on a meter dial which electronically translates the amplitude of vibration set up by the unbalance condition.

Inject insoluble powder

An air-operated loading mechanism corrects vitrified wheels by impregnating them with an insoluble powder of high specific gravity. The injection device permits permanent correction to be made without removing the wheel from the machine. It also overcomes the lack of homogeneity encountered in correcting by the wet slurry method.

Operating sequence for dynamic balancing is as follows: (1) Clamp wheel on balancing machine fixtures; (2) Press start button to begin wheel rotation; (3) Observe location of unbalance on scanning disc and the amount on meter; (4) Press stop button which actuates brake; (5) Move loading mechanism over the wheel; (6) Position wheel at unbalance location indicated by the scanning disc; (7) Inject compound in amount required; (8) Recheck to prove balance correction; and (9) Remove wheel.

The meter is calibrated in units of displacement which correspond directly to the ounce-inches of unbalance of the wheel being tested.

The conversion of unbalance from ounce-inches to units of displacement on the calibrated meter was done in the company's production control department.

A number of arbors and hardened and ground spacing sleeves are used to handle various wheels depending on individual wheel dimensions. A moisture trap is provided to prevent clogging of the dry compound in the air line.

Operating speed for the machine is 1200 rpm. A power supply of 220/440 v, 3 phase, 60 cycle, 1500 w is required to run the machine. Compressed air for operating the injection mechanism is 80 to 100 psi.

The balancing machine, developed and built by International Research and Development Corp., Columbus, weighs about 600 lb and takes up about 23 x 30 x 40 in. of floor space.

The compact machine takes up a minimum of floor space in the plant. Meters on the unit are viewed easily and operators can be trained within a reasonably short time.

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New Technical Literature:

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Precious metal plating

A booklet describing the properties and uses of precious metal electrodeposits illustrates and explains how desirable properties, such as increased resistance to oxidation and wear, or more uniform electrical conductivity can be plated on parts fabricated of base metals. Properties of silver, gold, rhodium, platinum, and palladium electrodeposits are listed. Tables of technical data are included. *Harper-Leader, Inc.*

For free copy circle No. 1 on postcard, p. 121.

Selective heating

A comprehensive catalog on Flamatic hardening machines and allied equipment is available. Profusely illustrated, it describes flamatic selective heating, which is a basic, proven method of hardening, brazing and heat processing. It also describes flamatic advantages, which include uniform performance, compactness, operator convenience, low maintenance, fast low-cost operation, and safety in every detail. Complete specifications are given. *Process Machinery Div., The Cincinnati Milling Machine Co.*

For free copy circle No. 2 on postcard, p. 121.

Colloidal graphite

Just published is a bulletin on colloidal graphite for surface coatings and impregnation, which describes how electric - furnace graphite of high purity is used effectively as a surface coating for many mechanical devices. Special dispersions of 'dag' colloidal graphite for surface coating and appropriate methods of application are presented in the bulletin. *Acheson Colloids Co.*

For free copy circle No. 3 on postcard, p. 121.

Stainless steel tubing

A brochure covering stainless steel tubing for heat exchangers and condensers is available. Two typical specifications covering this grade of tubing show how Electrunite tubing is processed to meet each requirement in the specifications. Photographs are used showing various production operations. *Steel and Tubes Div., Republic Steel Corp.*

For free copy circle No. 4 on postcard, p. 121.

FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 121.

Cutter-skiver

The Parker Model 1149-12 cutter-skiver is designed for cutting hydraulic wire braid hose, either cotton or rubber covered, and, in the case of rubber covered hose, for removing the outer layer of rubber preparatory to assembly with reusable Hoze-lok fittings. Specifications and instructions are included. *The Parker Appliance Co.*

For free copy circle No. 5 on postcard, p. 121.

Hydraulic cylinder data

A bulletin contains data on the company's line of heavy duty, 2000 psi high pressure hydraulic cylinders in 1½ in. through 12 in. bores, up to 22-foot strokes and 19 different mounting styles. The bulletin provides design, engineering, construction, mounting and operational data. *Miller Fluid Power Co.*

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Bronze valves

A folder describes globe and angle valves, horizontal and angle checks. This booklet gives illustrations, general dimensions and describes features of each valve. *The Ohio Injector Co.*

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FREE TECHNICAL LITERATURE

Protective helmets

A complete line of protective helmets developed for industrial workers, miners and fire-fighters is described. In addition to information on the importance of head protection, the 16-page brochure contains descriptions of all models of MSA Skullgards and their applications. Along with descriptions of reinforced and high-pressure plastic headgear, full descriptions of hats made of glass fiber and aluminum are given. *Mine Safety Appliances Co.*

For free copy circle No. 8 on postcard, p. 121.

Stainless steels

A 24-page booklet on the subject of joining of Crucible Rezistal stainless steels, written by the chief welding engineer for Crucible, is available. The booklet describes in detail seventeen methods employed in joining stainless steel by fusion processes. These processes include manual, automatic, and semi-automatic welding, brazing, and soldering. The booklet contains a section describing eight flame and arc cutting procedures commonly used for severing stainless steel. *Crucible Steel Co. of America.*

For free copy circle No. 9 on postcard, p. 121.

Pickling equipping

A new booklet, "Equipping the Pickle House" is offered as a practical guide to greater production at lower cost in a wide variety of pickling operations. The 32-page, 2-color booklet describes the use of specially designed Monel equipment in the processing of large and small fabricated parts, hollowware, and forgings and castings, as well as the common mill forms of steel and tinplate. More than 70 photographs illustrate practical applications of Monel in sling chains, yokes and special hooks, crates, racks, drums and other batch handling accessories and in hold-down rolls, lifting arms, tank guides, etc. *The International Nickel Co., Inc.*

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NEW!

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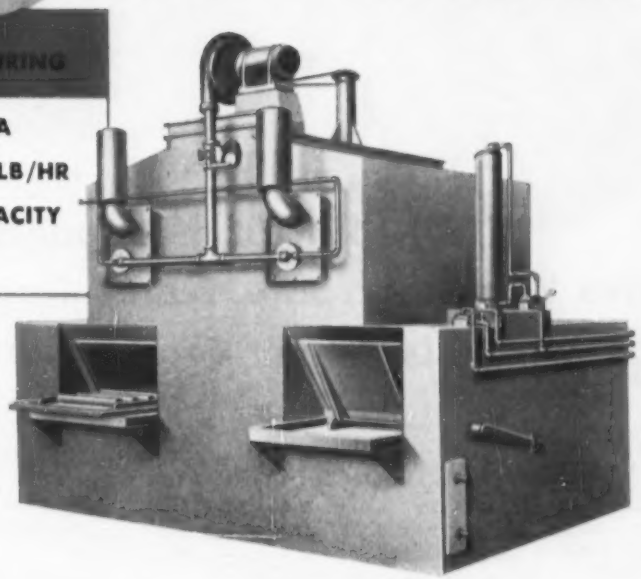
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Holcroft's new bantam-sized batch furnace for controlled atmosphere heat treating does a king-sized job at a low, low cost. An entirely new concept of batch operation, the furnace offers new opportunities not only for small plants, but for large ones which have limited or varied production problems. The new batch furnace offers the same engineering know how and quality that has made Holcroft the leader in heat treat development.

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Operation is simple—only two valves are involved. When the stock has completed its time in the furnace chamber it is lowered by an elevator, transferred into position for quenching, and lowered into the quench oil. Simultaneously, a previously-loaded tray of cold work moves onto the charge elevator and then up into the furnace chamber. The operator may remove the quenched stock from the discharge door or load the furnace through the charge door at any time during the heating cycle.

Quenching is fast and there is no loss of heating time loading or unloading. This arrangement reduces atmosphere gas requirements because vestibule flushing takes place while the stock is being heated.

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HOLCROFT & COMPANY, 6545 Epworth Blvd. Detroit 10, Mich.

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FREE TECHNICAL LITERATURE

Castings

A wall chart containing the complete design and engineering properties of the various types of Meehanite castings available to industry has been prepared. The chart measures 26 in. x 21 in. and will be a convenience to designers and engineers. It furnishes data on the general engineering, heat, wear and corrosion resisting types of Meehanite metals. The chart gives facts about the metallurgy of the castings. *Meehanite Metal Corp.*

For free copy circle No. 11 on postcard, p. 121.

Corrugated boxes

A wealth of up-to-date packaging material is contained in the revised edition of a booklet on merchandising with corrugated boxes. The booklet features points to remember in plotting a merchandising campaign. Another section offers a 10-point dramatization of the specific merchandising functions around which H&D corrugated boxes are designed. *Hinde & Dauch.*

For free copy circle No. 12 on postcard, p. 121.

Waterproof tapes

An illustrated brochure features the quality, economy and utility of controlled - strength waterproof tapes for many industrial applications. Typical uses for these tapes, as shown in the brochure, are protection of insulating materials in refrigerators and freezers, guarding metal parts of lift trucks against condensation during overseas shipment, and sealing of cartons to prevent moisture damage to contents. *Polyken Products Dept., The Kendall Co.*

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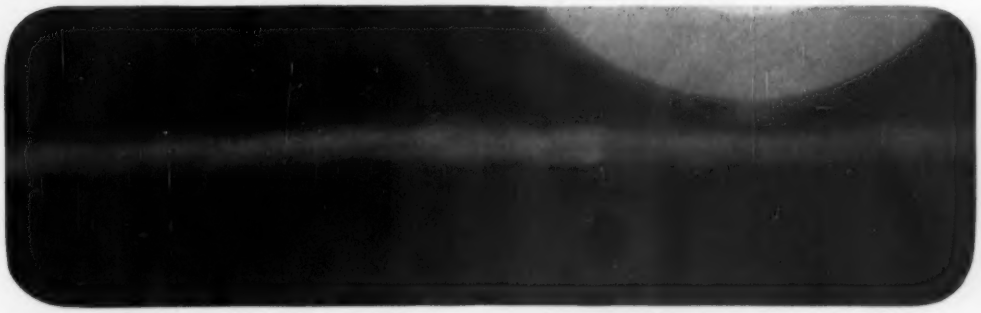
Iron power electrodes

The reprint of a paper given before the American Welding Society National Meeting by Jerry Hinkel concerning iron power electrodes and their application is offered. The paper covers the theory of the new electrodes and explains why they have a basic advantage in higher deposition rates. Typical production applications are illustrated. *The Lincoln Electric Co.*

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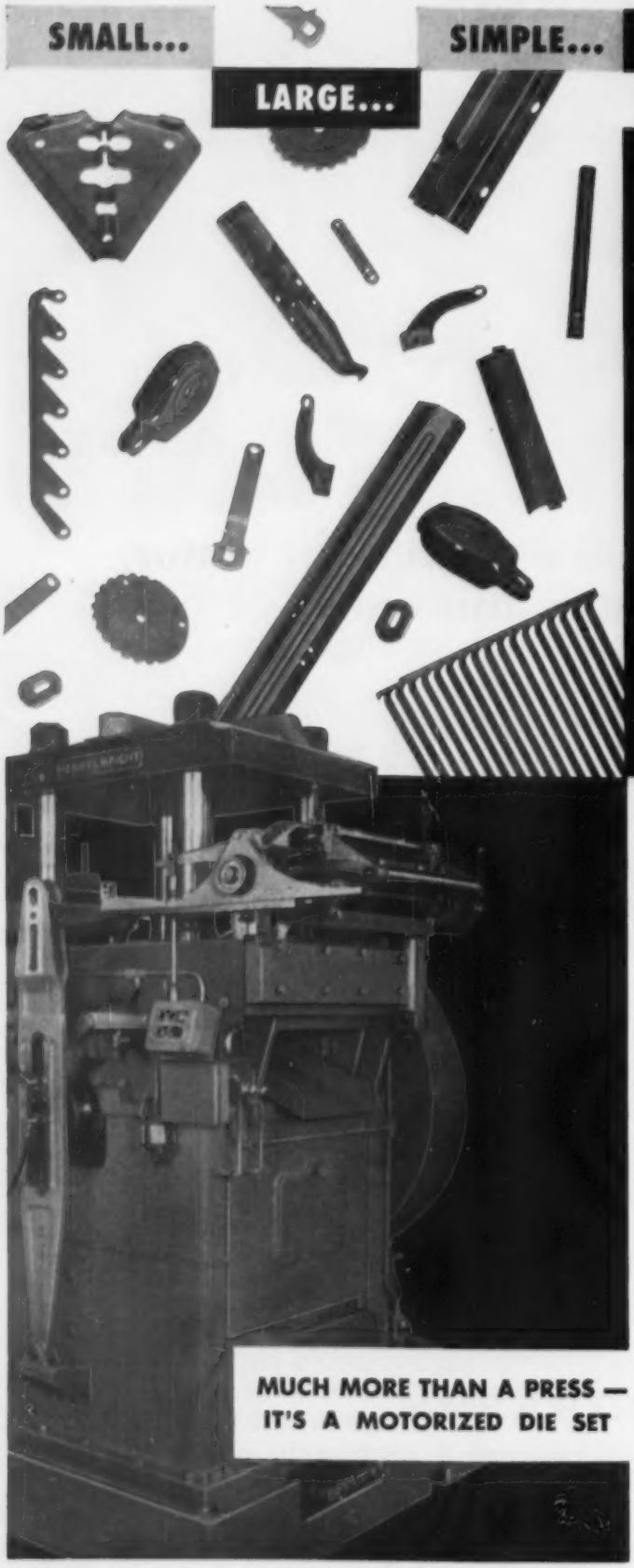
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This section starts on page 116

Composite catalog

This composite catalog briefly and concisely describes Honeywell industrial instruments and equipment, including the latest developments. Each description includes a reference to more detailed literature, which may be obtained from the Honeywell branch office nearest you. *Industrial Div., Minneapolis-Honeywell Regulator Co.*

For free copy circle No. 15 on postcard, p. 121.

Rivet tools

The latest Hi-shear rivet tool catalog, seventh edition, is available. The section on Hi-Torque tools has been completely revised, and additions made to other sections. Hi-Torque bolts have recently come into prominent usage in the major airframe plants because they can be torqued to higher values and at the same time resist any possible marring of the bolt-slots or drive, features essential to access covers and close out panels. *The Hi-Shear Rivet Tool Co.*

For free copy circle No. 16 on postcard, p. 121.

Motor buying information

A 28-page catalog of buying information on a-c motors is available. The bulletin presents complete buying information on standard a-c fractional and integral horsepower motors in most general use. Included are general- and definite-purpose fractional horsepower motors, and fhp gear motors. Information on all motors includes photos, ratings, book prices, dimensions, weights, frame numbers, and standard modifications. *General Electric Co.*

For free copy circle No. 17 on postcard, p. 121.

Drill jig bushings

A new folder on drill jig bushings lists drill sizes, and illustrates the types of drill bushings. Technical information is included. There is also a complete table which makes it easy to order the type of bushing needed, plus a list of quantity discounts offered. *American Drill Bushing Co.*

For free copy circle No. 18 on postcard, p. 121.

Load control

A group of data sheets and price lists on load control machines is available. The MEK-2128 Load Control was designed to fill the need for a low cost unit that can protect machinery and tooling of all types from damaging overloads, and can alter or control automatic machinery or process cycles to maintain maximum production efficiency. MEK load controls have been used to indicate the end of spark-out periods, to control feeds, and to indicate wheel glazing on grinding machines; to control injection molding presses. It can also start chip clearing cycles. *Machinery Electrification, Inc.*

For free copy circle No. 19 on postcard, p. 121.

Cartridge roller bearing

A 4-page catalog describes a new self - contained cartridge roller bearing. Designed for use on farm and industrial materials handling equipment, the new roller bearing is easily installed. It is available in three types of rollers. Catalog lists shaft and housing dimensions and bearing radial load ratings at 100 rpm. *Rollway Bearing Co., Inc.*

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Nylon pressure tubing

Flexible nylon pressure tubing is described in a new product bulletin. Outlined uses of the tubing, called Nylaflow, include air lines, process lines, coolant lines, fuel and oil lines, lubricant lines and hydraulic lines. Complete information is provided on the material's advantages, characteristics and properties. Cost and installation data rounds out the product description. *The Polymer Corp. of Pennsylvania*

For free copy circle No. 20 on postcard, p. 121.

Pressure blast

A 2-page bulletin on the use of pressure blast in aircraft engine overhaul operations is available. Describing thoroughly the application of the wet-blast process on both piston-type, turbo prop and straight jet engines, the folder is accompanied by a fully illustrated brochure picturing a full line of standard and automatic units. *The Cro-Plate Co., Inc.*

For free copy circle No. 21 on postcard, p. 121.

Pneumatic controller

A 12-page bulletin describes in detail the company's new Model 41A Pneumatic indicating controller, replacing the earlier Model 41 for control of process variables such as temperature, pressure, liquid level and humidity. New design features are fully explained, with emphasis on the longer, more readable indicating scale, extensive use of high quality control components, and simplified maintenance. *The Foxboro Co.*

For free copy circle No. 22 on postcard, p. 121.

Ground thread taps

A 25-page booklet covers the subject of ground thread taps in a thorough manner. Topics include: revision of tap standards as adopted by the Metal Cutting Tool Institute, new standards, nomenclature, marking, tap recommendations for classes of thread, and interim practice. Illustrations and detailed tables are included. *Pratt & Whitney Div. Niles-Bement-Pond Co.*

For free copy circle No. 23 on postcard, p. 121.

Welding control

An interesting folder on Robotron universal resistance welding control, designed for maximum versatility, is now available. It describes the new approach in the application of resistance welding controls to air or hydraulically operated spot and projection welding machines. Topics covered include: welding features, optional additional accessories and design features. *Robotron Corp.*

For free copy circle No. 24 on postcard, p. 121.

Double-suction pumps

Double-suction pumps for air conditioning and other general applications are described and illustrated in a folder. Each feature of the pumps is described in detail, and bearings and stuffing boxes are illustrated. *Allis-Chalmers*

For free copy circle No. 25 on postcard, p. 121.

Air compressors

Air compressors, available in 125 hp and 150 hp sizes and for pressures up to 125 PSI gage, are described. They come under the classification of the two-stage angle, double-acting, water-cooled, heavy-duty types. Ruggedly constructed, they provide great strength and durability. *Pennsylvania Pump & Compressor Co.*

For free copy circle No. 26 on postcard, p. 121.

Conductor material

An informative 8-page booklet on electrical conductor material features design data for the location of current conductors. The booklet illustrates typical assemblies for various types of conductors along with components of the assemblies. *Philadelphia Tramrail Co.*

For free copy circle No. 27 on postcard, p. 121.

Bronze globe valves

A folder describes a bronze globe valve which has set new performance standards in the most severe service in industry. The valve has Brinalloy seats and discs which need no maintenance. New design features are illustrated and described. *The Lunkenheimer Co.*

For free copy circle No. 28 on postcard, p. 121.

ANOTHER EXAMPLE of
REDUCING COSTS WITH—

Buhr ECONOMATION

Performs 23 operations every 18 seconds on automotive intake manifold!



This Buhr 5-way dial-type hydraulic-feed Special mills, drills, countersinks and individual-lead-screw taps 206 intake manifolds an hour gross.

The Machine is equipped with a Buhr 60″-diameter 6-position automatic index table, complete with shot bolt.

Chips are disposed automatically by means of a rotating chip conveyor.

Parts are loaded one per station in each of the six single-place fixtures. Power wrench with torque-control, automatically operates clamping mechanism.

Buhr's precision manufacturing methods provide complete interchangeability of all parts and component assemblies.



Buhr
MULTIPLE-SPINDLE
HIGH PRODUCTION MACHINERY

See what Buhr Economation can do to reduce your production costs. A phone call, wire or letter will bring you a prompt consultation with one of our top sales executives.

BUHR MACHINE TOOL CO.©
ANN ARBOR, MICHIGAN

Solidly Engineered • Precision Built • for World's Leading Manufacturers

PRODUCTION: Visual Aids Improve Control

Control board gives production status at a glance, quickly tells which parts are lagging . . . Shows order or part location and permits rapid daily evaluation of machine loads.

A basic problem in manufacturing is to deliver component parts to the assembly line in a steady flow. To avoid lack of parts or huge inventories, Kleinschmidt Laboratories, Inc. installed Produc-trol boards which show at a glance the progress of each part—where it is in the production schedule, where it is yet to go, and when it must be finished.

Previously, this information was recorded on progress cards kept in files. Cards were fine, but it was too easy to overlook a part until it reached the critical stage.

In a reperforator which the firm makes, there are approximately 3000 pieces. About 40 pct of these are made from raw stock. About 80 pct of all parts require secondary operations. One slip-up not caught in time could stop the assembly line.

How It Works

Each horizontal white line on a Produc-trol board is an elastic thread with a white peg at the end representing one part. The pertinent information about this part is contained in pockets at the left hand side of the board. When inventory of a part reaches a certain level, the job is opened.

A schedule is made out to move the part through the necessary departments on a definite time table which is checked to be sure the machines and man-power are available to do the job in the time allotted. From the schedule ticket, the entire course of the part through the plant is plotted on the board, each space representing one day, each department indicated with a coded pin. Yellow copies of the schedule are sent to the individual foremen whose racks then show what work is coming through, when it came in and when it must be out.

As slips from completed jobs reach production control, the part pin is moved forward.



Visible record . . .

WANT MORE DATA?

You may secure additional information on any item briefed in this section by using the reply card on page 121. Just indicate the page on which it appears. Be sure to note exactly the information wanted.



Standards:

Tap dimension revisions will aid users.

Ever since the development of modern automatic screw machines, and other machines for the tapping of holes, there has been a missing link in the engineering standards of hand taps, according to National Screw Products Assn. of Cleveland. The standard dimensions of taps until now, have made no provision for their easy adaptation to automatic screw machine use; which use accounts for a large percentage of the taps manufactured.

On the average, standard hand taps are too long to fit in the available space between the spindle nose and the tool holder position of automatic screw machines.

This has required the purchase of special taps, or the alteration of standard hand taps by cutting off excess length on the shank and, even at times, the excess threaded portion of the tap.

Special Taps Costly

Special taps are costly to manufacturer and therefore, higher priced. Altering standard hand taps in the average shop, requires extra time and when the threaded portion of the tap must be shortened, taps must be rechamfered for cutting accuracy.

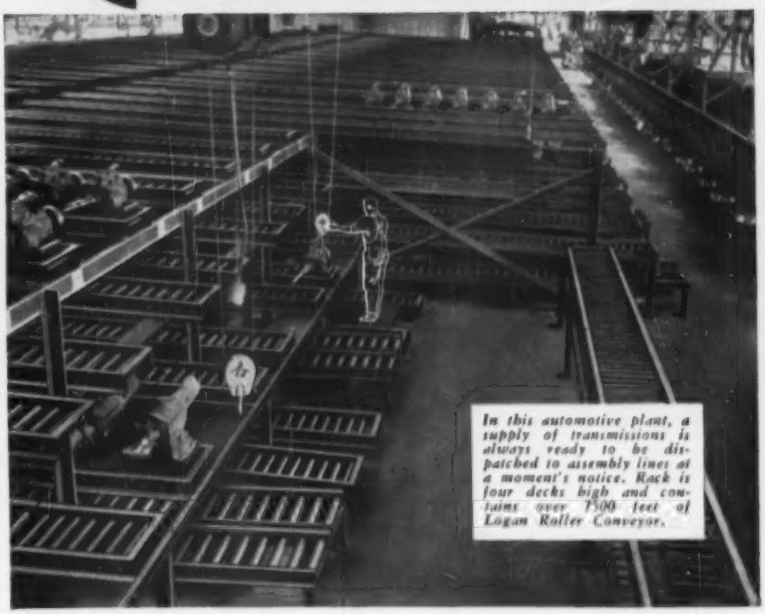
As all taps have a slight back taper in the threaded portion, we sometimes create an undersize condition by cutting off the front end of hand taps to fit the machines. This again is costly in both tools and scrap.

A Comparable Problem

Years ago, the National Screw Machine Products Assn. had a similar problem with standard drill lengths being too long to fit our standard automatic screw machines. This problem was made a project of the Manufacturing Standards Committee of the National Screw Machine Products Assn.

After extensive surveys and investigation, a set of standards

ROLLER CONVEYOR
STORAGE RACK



In this automotive plant, a supply of transmissions is always ready to be dispatched to assembly lines at a moment's notice. Rack is four decks high and contains over 7500 feet of Logan Roller Conveyor.

Material always ready,

like a bus-man's coin bank!



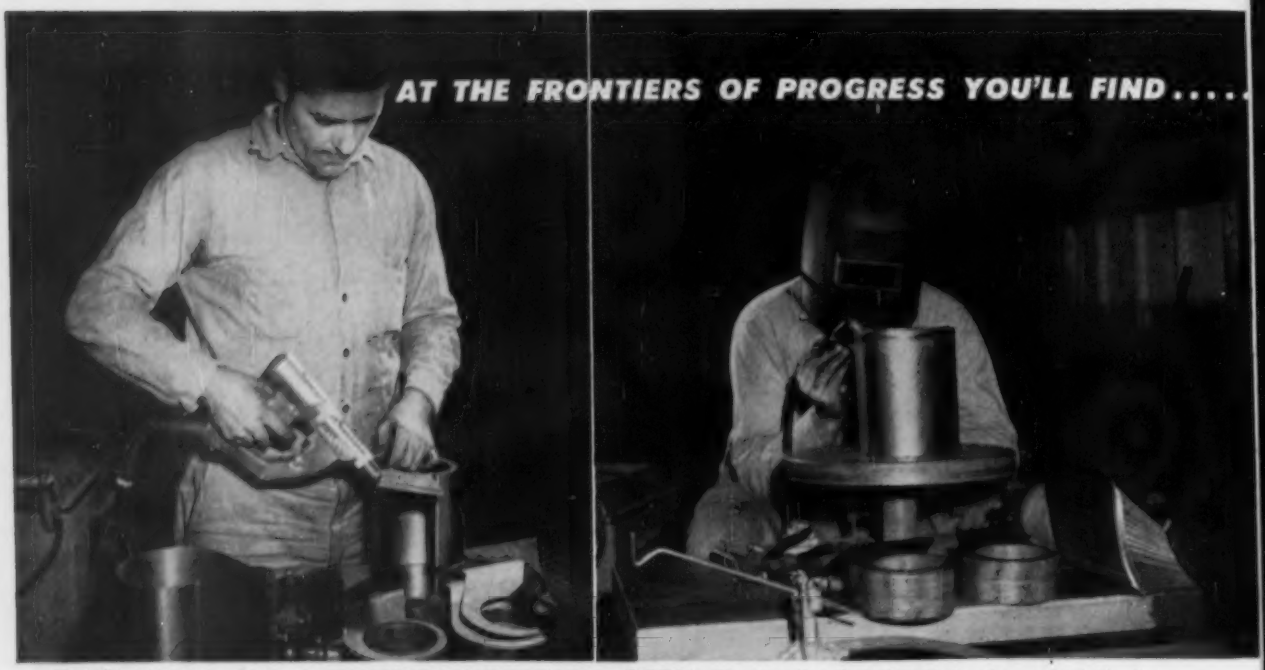
When a piece is removed — another slips into place! That is the principle of Logan Roller Conveyor Storage Racks. Advantages:

(a) Eliminate confusion and hazards which frequently accompany use of skids and trucks. (b) Save aisle space required for trucking. (c) Stock always ready on first-in-first-out basis. (d) Material flows by gravity. (e) Quick visual check of stock at all times. (f) Save steps, time, money.

Adaptable to hundreds of different products in many industries. Perhaps there is an application in your plant. Write for further information, or for nearest Logan engineer.

LOGAN CO., 545 CABEL ST., LOUISVILLE, KY.

Logan Conveyors



STEP 1. Using an Aircospot gun, (which takes one second to make a strong, sound spot weld), the Falstrom operator tack-welds flange on a metal cover. An average of 10 tacks are needed. The metal is 16 gauge mild steel.

STEP 2. Mounting the tack-welded unit on a turntable, the same operator exchanges the Aircospot gun for an HB-8 Heliweld holder. The Airco Heliweld process joins the circumferential seam at a speed of 16 inches per minute.

Falstrom Company ...eliminates jigs and back-up plates with AIRCOSPOT ...speeds seam-welding 75% with HELIWELDING!

It used to take 17 minutes to tack and weld a complete metal cover at the Falstrom Company, Passaic, N. J. Now, with a combination of Aircospot and Airco Heliwelding, this operation has been reduced to a fraction of the time.

Previous methods of tack-welding required the use of jigs and fixtures—a procedure that hampered the operator and slowed production. Aircospot, however, tack-welds from just one side of the metal. It eliminates jigs and back-up plates, completely streamlining the work flow. At the same time, by using Heliwelding instead of oxyacetylene welding, Falstrom was able to reduce welding time 75%. This faster method of welding thin sections of metal provided further economies as the end product required less finishing and grinding.

One, or both, of these Airco inert-gas shielded arc welding processes can provide similar savings in your particular operation. Contact your local Airco Sales Representative or Authorized Airco Dealer for an on-the-spot demonstration in your plant—or—write Airco direct for complete information. Request Aircospot Catalog #2315, Heliwelding Catalog #2300.

AIRCO®

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Divisions of Air Reduction Company, Incorporated, with offices and dealers in most principal cities

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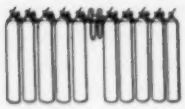
Represented Internationally by
Airco Company International

Foreign Subsidiaries:
Air Reduction Canada Limited
Cuban Air Products Corporation

Products of the divisions of Air Reduction Company, Incorporated, include: AIRCO—industrial gases, welding and cutting equipment, and acetylenic chemicals • PURECO—carbon dioxide, liquid-solid ("DRY-ICE") • OHIO—medical gases and hospital equipment • NATIONAL CARBIDE—pipeline acetylene and calcium carbide • COLTON—polyvinyl-acetates,—alcohols, and other synthetic resins.

AN AIR REDUCTION PRODUCT

AIRCO items for inert-gas-shielded arc welding



Air Reduction is your preferred source for the shielding gases you need. Argon, helium, or a mixture of gases are employed for Aircomatic, Heliwelding, and Aircospot. Airco supplies them all. Prompt bulk delivery, as well as by the cylinder, are obtainable.

Consult your Airco District Office for specific information concerning gas mixtures and recommendations based on the type of work you are doing.



Airco supplies a complete range of tungsten electrodes for AC and DC Heliwelding. Electrodes are available in pure tungsten, thoriated tungsten, (Thor-Tung) and zirconium tungsten. All three types are offered in seven diameters from .040" to ½" and in four lengths from 3" to 18". Other lengths of all electrodes on special order.

Aircomatic-Heliweld filler wire is processed to conform to the highest standards for surface finish, cast and cleanliness. Its use assures smooth, uninterrupted wire feed. Specifically designed for use in the Aircomatic manual and automatic head, and the Heliweld filler wire feeder. *Write for literature on these items.*

New standards decrease overall tap length . . .

was devised and with the co-operation of the drill companies, this set of standards became a regular item of production by the drill manufacturers.

C. J. Baumgart, President of Screw Machine Engineering Co., Inc., Chicago, in 1953 was appointed by the National Screw Machine Products Assn. chairman of a committee to investigate the possibilities of a similar set of standards for stub taps, to be officially known as the Stub Tap Screw Machine Standards.

Standards Developed

This committee has worked on surveys with the cooperation of 280 member companies in the National Screw Machine Products Assn. since 1953 and has now arrived at a set of standards believed satisfactory to all companies.

These standards could not have been possible without the close co-operation of the Besly-Welles Corp. of Beloit, Wis., tap manufacturers, whose engineers worked with Mr. Baumgart's committee to arrive at a practical stub tap to meet the requirements of the industry.

Decrease Length

The new standards primarily decrease the overall length of the tap; furnishing both a shorter shank and a shorter threaded portion. The shank will be made to the nominal OD of the tap. This will increase the strength of the tap in the larger diameters, as our present hand taps use a turned down shank.

The shank diameters will be ground concentric with the threaded portion to insure accurate alignment. The shank diameters will be held to a +.000, —.001 below nominal dimension of the tap.

This will allow for easy entry into standard bushings made for holding stub taps. This standardization of shank diameters will

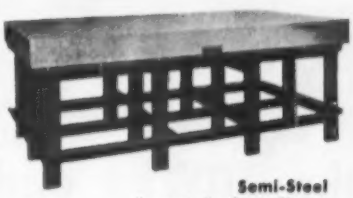
NOW **TWO** TYPES OF CHALLENGE SURFACE PLATES



NEW! CLOVIS BLACK GRANITE
Rated Class A. Surface accuracy guaranteed.

FINE GRAIN SPECIAL ANALYSIS SEMI-STEEL
Precision ground or hand-scraped

STILL **ONE** STANDARD OF CHALLENGE QUALITY!



Semi-Steel Layout Surface Plates
High compressive strength . . . Low coefficient of expansion. 16 standard sizes, 6" thick — other sizes to order. Also available for sectional assembly into unlimited sizes.



Cast-Iron Top Work Benches
Four sizes, three styles. For individual use or on a continuous line. With self-contained storage facilities.

Other Challenge Precision Products:
Clamp Edge Layout Plates • Reading Tables • Lapping Plates • Welding Tables • Surface Plates • Bench Plates • Surface Plate Equipment.

See the full line of Challenge Clovis Black Granite and Semi-Steel Surface Plates in the new Challenge Catalog. Send for your free copy today!

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Offices, Factories and Show Room
GRAND HAVEN, MICH.

Use FAIRFIELD GEARS



the POWER and PERFORMANCE OF YOUR PRODUCT

There's hardly a power driven machine built that doesn't depend on gears for its get-up-and-go—its productivity—and very often *its reputation.*

No wonder, then, why more and more manufacturers insist on Fairfield Gears for their QUALITY—and also for their mass-production ECONOMY.

No matter what type or size of gears you require, it will pay you to check with Fairfield first. Take advantage, too, of Fairfield's helpful engineering services. *Your inquiry will receive prompt attention.*

Ask for interesting, illustrated bulletin.

Fine Gears Made to Order

SPUR GEARS—Straight, helical, and internal. Sizes from 16 pitch, 1½" dia., to 1½ pitch, 36" dia.
HERRINGBONE—(Fellows Type). Sizes from 1½" to 15".
SPIRAL BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.
STRAIGHT BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.
HYPOID—Sizes from 1½" to 28" dia.
ZEROL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 21" dia.
WORMS AND WORM GEARS—Worms to 7" dia. Worm gears to 36" dia.
SPLINED SHAFTS—Lengths to 52". Diameters from 1" to 6".
DIFFERENTIALS—10,000 to 300,000 inch pounds capacity.

Note: All sizes above are approximate.

FAIRFIELD MANUFACTURING CO. for FINE GEARS

2319 SOUTH CONCORD ROAD • LAFAYETTE, INDIANA

New stub tap will offer user several savings . . . Setup time will be saved.

eliminate special size bushings and bring us closer to a more unified standardization on dimensions.

Greater Bearing Surface

The squares on the tap will be eliminated excepting two small flats on the ends of the shank for use as driving surfaces in the manufacture of the taps. The elimination of the long squared portion of the taps will provide greater bearing surface in the bushings, thereby improving the alignment between tap and work and guarantee better holding power.

The new stub tap will make several savings for the user. It is ready to use, saving set up time. It has a perfect concentric shank, fitting standard bushings. It will have a perfect factory ground chamfer. It is stronger and will be more economical.

Increased Accuracy

This new stub tap standard promulgated by the National Screw Machine Products Assn. does not attempt to change existing tap standards. Rather, these standards are intended to supplement existing standards with an additional line of taps that will increase tap convenience and improve accuracy, extend tap life, and permit automatic screw machine tap users to insert them into their machines without alterations.

Through close co-operation with the Besly-Welles Corp., the new standard has been designed to make stub taps in fractional sizes from ¼" through 1 in. and in machine screw sizes from No. 0 through No. 14.

The taps in all of these sizes are now in production at the Besly plant in Beloit, Wis. for delivery to users and to distributors early in June.

Machining:

Forged steel gear blanks stand tough service.

Savings in machining time and cutter cost, better performance through extended service life, and lower initial cost, are some of the benefits accruing to a manufacturer of mine locomotive drive gears, using forged steel gear blanks.

Pittsburgh Gear Co., Neville Island, Pa., saves almost 1 hour per gear in machining time alone, working on forged gear blanks supplied by Standard Steel Works Div. of Baldwin-Lima-Hamilton Corp., Burnham, Pa. Because of the uniformity of the forged blank metal, machine tool cutter life is greatly improved.

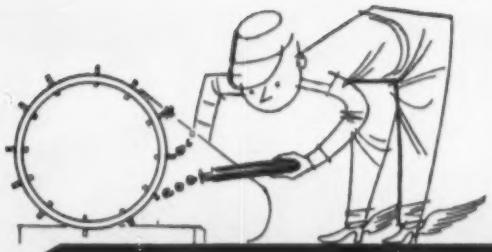
Must Stand Wear

The high quality gear is a spur gear with flame-hardened teeth, designed specially for extra-rugged wear in mine locomotives. In service, the drive gears of the locomotives are subjected to severe shock and impact, since the heavy trains are starting and stopping almost continuously.

Downtime on coal mine locomotives, like downtime on any production machinery is expensive. Consequently, a locomotive that is out of service because of gear failures is an economic liability. Hence, the demand for failure-proof operating equipment is essential.



Cutting drive gear . . .



"STUD" NELSON END WELDS

HEAT EXCHANGER FINS IN A FLASH!

The trigger-quick NELWELD® system offers practical end welding for the attachment of low-cost pin fins on heat exchangers. The same system is used on pressure-tight vessels where attachments must be made without piercing the shell.

THREE METHODS OF INCREASING HEAT TRANSFER WITH NELSON STUDS



1. HOLE, TAPERED OR KNURLED PIN, AND STUD
2. STUD ONE SIDE ONLY
3. TWO ACCESSIBLE SIDES

The NELWELD system is quicker and stronger than hand welding . . . costs less because it saves time. It is a method that provides a continuous heat path for maximum heat transfer . . . offers a logical solution to the problem of interior fins . . . provides positive pressure-tight welds . . . a minimum of warpage.

Why not call your nearest Nelson field engineer? He's an expert at reducing cost, and he'll be glad to assist you in analyzing your stud welding needs. Write for further information.

Stud Nelson

Fasten it Better at Less Cost with

NELWELD®

NELSON STUD WELDING
2731 Toledo Avenue
Lorain, Ohio

Please send more information on stud welding wood to steel, and other cost-saving applications.

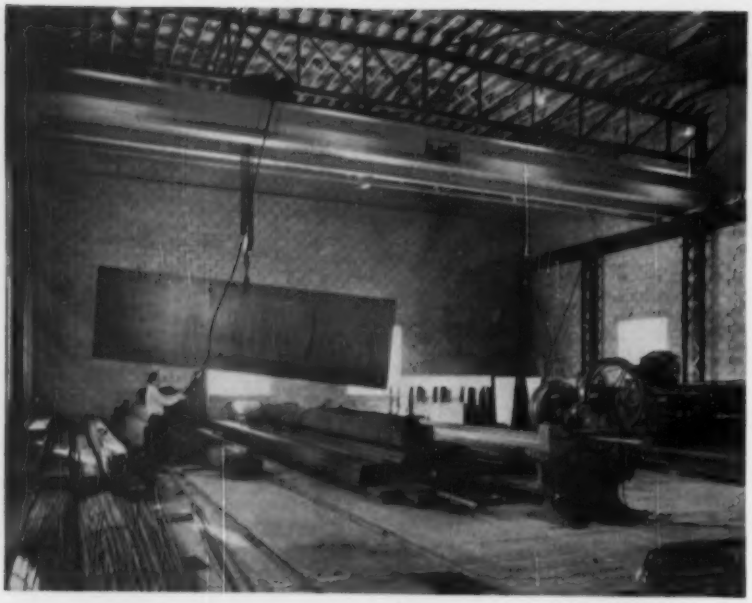
NAME _____

COMPANY _____

ADDRESS _____

CITY AND STATE _____

NELSON STUD WELDING DIV. OF GREGORY INDUSTRIES, INC. LORAIN, OHIO



YOU SAVE THREE WAYS WITH A CRANE LIKE THIS!

Series "D" 'Load Lifter' All-Electric Cranes surpass average industrial needs, but cost far less than other makes for the same service. The second saving results from the permanent efficiency and economy 'Load Lifter' Cranes put into every load handling operation. Third, these rugged cranes require only minimum maintenance.

Invest in a Series "D" 'Load Lifter' Crane and you get the benefits of standardization and mass production — plus advantages first made famous on "Shaw-Box" Heavy-Duty Cranes. The *three-girder* bridge doesn't whip or skew. Bridge and trolley wheels are fixed on axles that rotate on antifriction bearings. Motor and drive shaft are permanently aligned. All gearing operates on oil in sealed housings. Accurate spotting is made easy by variable-speed magnetic control, operated by push buttons on floor controlled cranes, and by master switches on cage controlled cranes. Man, load and crane are safeguarded by protective devices.

If you are looking for dependable, economical crane service in the 1 to 20 ton range, write for Series "D" 'Load Lifter' Crane Catalog 221. From it you can easily select one of the three basic types and three trolley styles in the capacity you need.

'Load Lifter' CRANES

MANNING, MAXWELL & MOORE, INC. Muskegon, Michigan Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' and 'American-Microsen' Industrial Instruments, and Aircraft Products.

For that reason, mining locomotives are equipped almost exclusively with forged steel gears. Because of their denser core and more uniform internal structure, the forgings wear longer.

As received from Standard Steel, the forged blanks are SAE-AISI 1035 steel, annealed, rough machined and ready for finish machining.

Standard Steel controls the gear size closely during the forging operation. The rough turning eliminates all out-of-roundness and rough machining leaves the forgings at standard machine shop tolerances. Pittsburgh Gear does not have to true up or balance the gear blanks prior to machining.

Machining Operations

Machining operations consist of finish turning, facing and boring the blanks on a Bullard 36-in. vertical turret lathe. These first machining steps take less time because of the excellent machinability characteristics and dimensional accuracy of the blanks. In finish machining alone, the company saves about 50 minutes on turning and setup time.

The uniformity of internal structure and the close dimensional tolerances of the blanks make it necessary to set up the machine only once. There is no need to set up separately on each gear of a given size; all gear blanks of the same size can be machined on a single setup.

No Hard Spots

Next the teeth are hobbed on a Gould & Eberhart 36-in. hobbing machine. Again the structural uniformity of the metal is an advantage. The machine is set at maximum speed, because there is no danger of hard spots or sand porosity, such as might be present in castings. Pittsburgh Gear estimates that the life of the high speed hobs has been extended by 20 pct, working on the forgings.

Pittsburgh Gear, a subsidiary of Brad Foote Gear Works, Inc., is a major supplier of gears.

Lighting:

Refinements keep output high, cut spoilage

Lighting is being used as a production tool to keep output high and spoilage to a minimum at the new Sylvania TV plant in Batavia, N. Y. Spoilage is particularly significant item in such a plant because a defective chassis cannot be economically scrapped. The faulty connection, ground or short circuit must be located and repaired at considerable expense in time and effort.

As designed by Sylvania engineers, the lighting arrangements follow methods outlined in the American Standard Practice of Industrial Lighting. A separate study was also made of the assembly line problem and a special fixture was designed for its solution.

Description of Plant

The plant, designed for its present use, is of single- and two-story construction approximately 350 x 900 ft, with 30 x 40 ft bays.

The flat roof is supported by 40-ft spans of steel I beams with steel beams at 6-ft intervals or bar-joists at 4-ft intervals, normal to the main beams. Ceiling height is 16 ft and there is a 14-ft clearance to the lower flanges of the I beams. Walls are brick and 8 x 8-ft windows have their sills 3½ ft above the floor. Metal louvered screens are used on the sides of the building which receive sunlight.

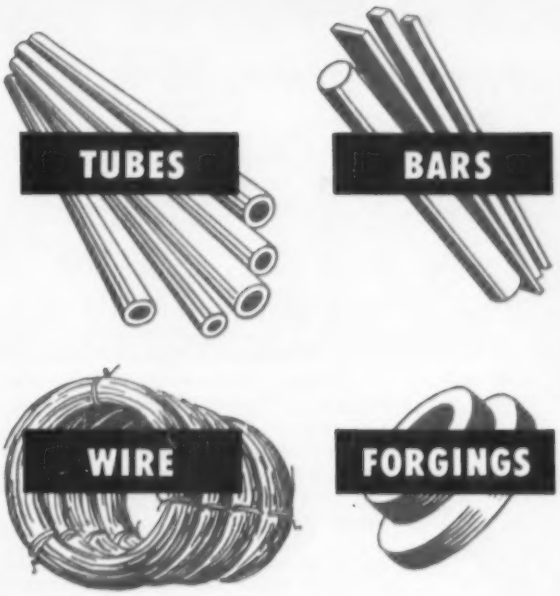


Lighting the job . . .

World's largest stocks of

52100

STEEL TUBING and BARS



Write for the latest stock list

Contact our nearest office or write to Peterson Steels, Inc. Springfield Road, Union, New Jersey. Address: Dept. I

PETERSON STEELS, INC.

UNION, NEW JERSEY

Detroit, Michigan • Chicago, Illinois



Edmont Case No. 479: Handling steel on various operations. Edmont No. 30 plastic palm coated gloves outwore canvas 10 to 1 and saved over 80% in replacement costs.

Job-fitted gloves outwore canvas 10 to 1



No. 67W Grab-It rough rubber coated



No. 151 Plax plastic impregnated

By fitting the glove to the job, you can substantially reduce lost-time accidents due to hand injuries. At the same time, you effect cost savings of 40% to 70% through longer wear, and improve employee comfort and morale.

Edmont makes over 50 standard types of gloves, palm coated or fully-coated with Neox (reinforced neoprene), natural rubber or vinyl plastic coatings. There's a type for practically every handling requirement including resistance to cutting, abrasion, oils, greases, acids, caustics, solvents, degreasants, extremes of heat and cold, etc. Our laboratory also develops special types for special conditions.

Edmont Case No. 208: Handling explosives in fiber cases, Edmont palm coated Grab-It gloves outwore leather palm gloves 3 to 1 and gave positive non-slip grip at all times.

Edmont Case No. 356: In handling laminated plastic, leading appliance manufacturer found Edmont's new PLAX gloves (light plastic-impregnated fabric) outwore canvas 4 times, and gave better protection against sharp edges.

FREE JOB-TEST OFFER: Send us a description of your operation, materials handled and temperature condition. Without cost, we will recommend the correct glove and send free samples for you to job-test.

The Edmont Manufacturing Co., 1234 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves, available through leading industrial suppliers.

Edmont

Edmont job-fitted gloves

The assembly lines were given intensive study because of the special visual problems introduced by the assembly of TV chassis. In this work the physical task consists of picking up a part such as a resistor or condenser from a bin, inserting the connecting wires through the proper holes in the terminal lugs of tube sockets or connection blocks, and soldering the connections with a soldering iron.

The visual task involves seeing the hole through which the wire must go, guiding the insertion of the wire, guiding the point of the soldering iron.

Work Is Fine

The visual task differs from those of fine assembly work in most other industries because it is seen against an immediate background of the bright, cadmium-plated chassis. The surface is rather specular and, being tilted toward the operator for ease of assembly, reflects somewhat diffused images of the overhead light sources. A more common example of a fine assembly task in the electronics industry involves manipulating and welding very fine wires for miniature tubes, transistors and the like, where the immediate surround is a bench top or the base of a welding machine, and can be manipulated in regard to reflectance and specularity.

With the TV set chassis, however, this control of the situation is not possible. Therefore the lighting must bear the full brunt of providing the optimum visual situation.



Visibility improved . . .

New lighting eliminated reflection problems . . .

The assembly plant previously used for this work had overhead lighting from open non-shielded industrial fixtures. This produced a band of reflected brightness across the chassis. Thus a connection seen against the bright band appeared in silhouette, while one seen against a darker area was visible by direct lighting.

The brightness of the reflection in the chassis was such as to be uncomfortable to many people. Since a reflection in the chassis could not be avoided, the problem was seen as one of spreading the reflection and minimizing its brightness, while providing a high level of illumination.

New Fixture Designed

With these points in mind a new fixture was designed. This fixture consists of two continuous rows of dual 90 w open end industrial units mounted side by side and shielded by a continuous row or 32 in. square sections of white diffusing corrugated vinyl plastic.

Corrugations are normal to the lamps for greatest brightness uniformity. The shielding is mounted approximately 2 in. below the reflectors and 54 in. above the center of the average chassis, and centered above the chassis centers. The module sections are mounted so that any one section can be lifted and slid over an adjacent section for lamp maintenance, or the panels can be removed readily for cleaning.

Under the new lighting, the brightest reflection has fallen slightly to 195 footlamberts while the footcandle level has risen to 228. This, together with the fact that the bright reflections are spread over a much greater area of the chassis, has raised the adaptation of the eye markedly and eliminated annoyance from the reflections.

*The footlambert is the unit of brightness, representing the number of lumens of light per square foot leaving a surface in a direction toward the observer. The footcandle is the unit of illumination, representing the number of lumens per square foot falling on the surface.

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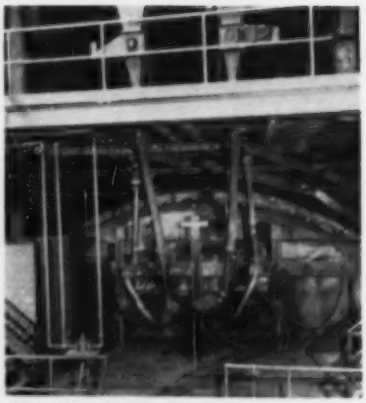
1453 SCHUYLER AVE., MONTOUR FALLS, N.Y.

Smelting:

Use oxygen flash process for copper sulphides.

Details of an oxygen flash smelting process for treating copper concentrates were revealed by the International Nickel Co. of Canada, Ltd. It is said to be one of the world's first commercially successful processes for smelting fine sulphides in suspension. The method is now being used to treat all of the company's copper sulphide concentrates.

Under development since 1945, the process recently completed its first year of successful operation. It has reduced copper smelting costs and, in addition, the use of oxygen for smelting has produced a high quality furnace gas from which liquid sulphur dioxide and sulphuric acid are made.



Big flash furnace . . .

The process eliminates the fuel normally required for smelting and permits large-scale output of liquid sulphur dioxide produced from the flash smelting furnace gases. The low-cost oxygen which makes the process economically possible is produced by a tonnage oxygen unit which was built by Canadian Liquid Air Co. This unit produces 325 tons of 95 pct pure oxygen every 24 hours. This corresponds to 2-2/3 billion cubic feet of oxygen per year.

Conventional Treatment

Conventional treatment of copper sulphide concentrate involves smelting in reverberatory furnaces with pulverized coal or other fuel, with or without prior roasting. The matte formed contains a large proportion of iron sulphide, which is subsequently removed by oxidation and slagging in Bessemer converters.

The converter slag formed is returned to the copper reverberatory furnaces. The copper sulphide remaining is "blown" to blister copper which is then refined for commercial use. The former practice was to wet charge the copper concentrates with flux to reverberatory furnaces, and smelt with pulverized coal.

In the Inco flash smelting process, finely-divided copper concentrates and flux are dried and injected with oxygen into the preheated smelting furnace to produce

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matte, slag and a gas containing about 75 pct sulphur dioxide. In the furnace, the oxygen combines with some of the sulphur and iron of the chalcopyrite (copper-iron-sulphide) to form sulphur dioxide and iron oxide.

The heat of the reaction is sufficient to melt the residual copper-iron sulphide to form a matte, and the iron oxide combines with the siliceous flux to form a slag. An important feature of the process is the method of cleaning the copper-rich slag by flash smelting pyrrhotite at the skimming end of the furance. The slag is showered with iron sulphide droplets which, in settling into the matte beneath, extract copper from the slag.

Gas Scrubbed First

The flash smelting furnace gas is water-scrubbed and treated by a wet Cottrell before it is converted into liquid sulphur dioxide by Canadian Industries, Ltd. The production of liquid sulphur dioxide involves drying the cleaned gas with sulphuric acid, then compressing and cooling the gas to condense the sulphur dioxide. Using gas from this furnace and other smelter units, last year's production was about 70,000 tons of liquid sulphur dioxide for use by the Canadian sulphite pulp industry as well as about 65,000 tons of 100 pct sulphuric acid.

The flash smelting furnace is 68 feet long, 24 feet wide and 17 feet high at the ends.

Magnesium:

New thorium alloy sheet for jet use.

Sheet and plate of magnesium—thorium alloy HK31 is now being rolled. Formerly available only as castings, these alloys as fabricated by Brooks & Perkins, Inc., of Detroit, have excellent tensile strength and creep resistant properties in the 300°-700°F range.

The alloys are said to be particularly useful for jet engine and missile applications, where they fill a gap in lightweight materials available for use in this temperature range.

Plastics:

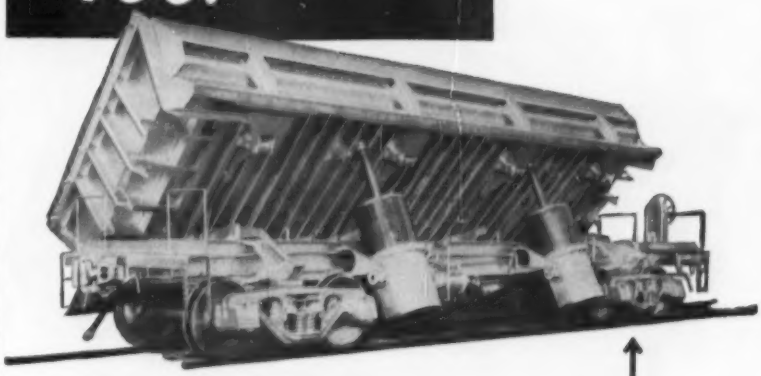
Glass-modified for more strength.

Two new glass-and-cellulose materials are designed for heavy duty industrial applications. They offer high tensile and flexural strength, a bulk factor of two to one, fast rate of cure, excellent moldability, and long shelf life.

Designated as RM 4015 and RM 4030 by the Rogers Corp., Rogers, Conn., the materials are available as sheets and blanked preforms. They lend themselves to standard molding operations, high speed tapping, and the molding-in of inserts.

Both products are clean and dust free; permit the construction and use of very shallow molds; also molds designed for low bulk general purpose materials.

BOOSTS EARNINGS TOO!



The Differential Air Dump Car has a way with operating expenses — cuts 'em down!

There's another pair of massive muscles on the other side of the car, too, means two-way dumping and greater flexibility.

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Welding:

New rod for salvaging cast iron.

A new welding electrode with a special powdered iron coating alloys pure nickel with iron to produce dense, high strength, machinable welds in gray, malleable and dutile cast irons. Called Nicol-Rod No. 99, it is made by Marquette Mfg. Co., Minneapolis.

Its outstanding advantage is said to be the ease with which welds can be made. The arc is self-starting and the rod re-ignites without freezing to the work. A softer, more stable arc is obtained with ac or dc, straight or reverse polarity. Of particular importance is that the arc is more stable on low, open circuit voltages.

Extensive field tests show that sound, machineable welds can be produced in all cast irons, even those that are old, grease-soaked or corroded. Welds produced have a minimum coefficient of expansion and contraction which ends cracking during cooling. The weld metal forms a positive bond and is softer but stronger than the cast iron. When finished the weld metal matches the color of the cast iron.

When an arc is struck the electrode develops a deep cone, causing metal to be applied to the work with more direct force.



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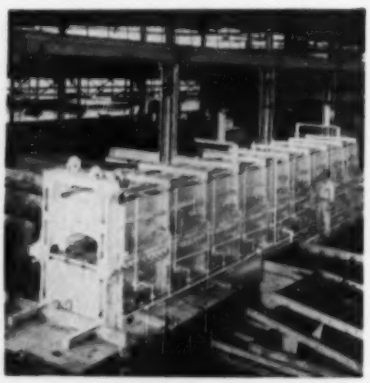
Heat Treating:

Huge new furnace built, shipped assembled.

One of the largest industrial heat treat furnaces ever shipped out of the Toledo plant of the Surface Combustion Corp. left recently on two railroad flat cars. This furnace, 70 ft long and weighing approximately 70 tons, was completely assembled ready for installation in the Peoria plant of Caterpillar Tractor Co.

Conventional practice in the building of furnaces of this size is to fabricate parts in Toledo and ship them together with refractories, piping materials, etc., to the customer's plant for erection.

Caterpillar Tractor Co. did not want the confusion and inconvenience of having a large industrial furnace built right in the middle of its production operations. This new practice on furnace erection will reduce the normal erection time to a week.



Heat treat furnace . . .

Carbides:

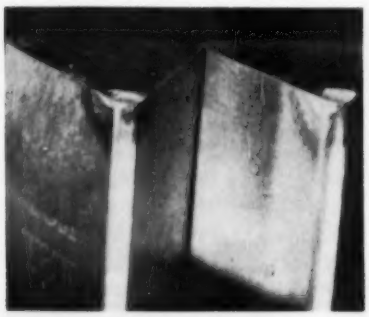
New cutting material sets high production rates.

A new multi-purpose sintered carbide steel-cutting material has recently been developed to increase productivity on both high and low-speed machines through wide ranges of application. The new material, known as K21, is made by Kennametal Inc., Latrobe, Pa.

Tests show that its performance is highly satisfactory. In one plant, the new material is reported to have reduced tool cost from $0.20 to $0.004 per piece. In a second plant, K21 in insert form reportedly outproduced another 6 pieces to 1 in machining a heavy steel casting.

Has High Rupture Strength

Inserts of K21 also produced 468 pieces in a light and fast operation on a stator core compared to 402 for the tool previously used. On still another job involving 4140 barstock, the new carbide machined 27 pieces per index while another tool produced only 19.



Cratering compared . . .



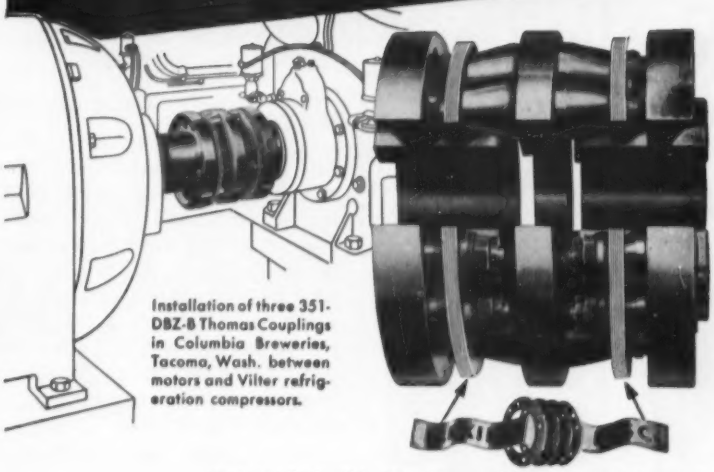
Less edge-wear . . .

It has a hardness of 91.5 RA plus high transverse rupture strength. It was specifically designed for general cutting, heavy roughing and finishing of steel products. Its broad range enables peak efficiency from high-speed machines and stepped up productivity on older, slower machines.

Among the material's other outstanding characteristics are high edge-strength, combined with superior wear qualities, and excellent resistance to cratering. "It also possesses high hardness and is particularly effective on plunge and interrupted cutting of castings having sand inclusions and hard spots."

Good performance has also been obtained on light cuts—an operation for which the new material was not specifically designed. In other tests on actual production, K21 proved to be a good material for general purpose steel machining. The material is made in the form of blanks, inserts and tools.

THOMAS FLEXIBLE COUPLINGS...
for more years of better service!



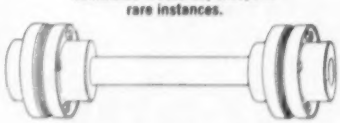
Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES	
FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



Thomas Couplings are made for a wide range of speeds, horsepower and shaft sizes and can be assembled or disassembled without disturbing the connected machines, except in rare instances.



THOMAS

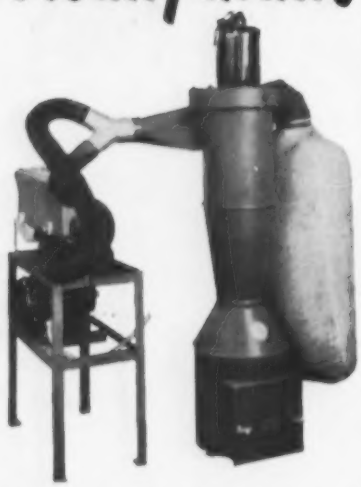
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CLAD METAL: Continuous Bond

High vacuum brazing method for cladding metals used in processes involving corrosion . . . Clad plates produced by heating assembly of cladding metal and base plate in vacuum.

A new high vacuum brazing method has been developed for cladding metals to be used in highly corrosive industrial processes. The method and the clad product have been named Hortonclad by the developer, Chicago Bridge & Iron Co., Chicago.

New facilities at the firm's plant in Birmingham, Ala., feature specially designed equipment and controls essential to production of high quality clad metals.

FOR MORE DATA ON MATERIALS

More information on any item reported in this section may be obtained by using the reply card on page 121. Indicate the page on which the item appears and note exactly the information wanted.

Many Alloys Available

Hortonclad is available in nickel base steel alloys such as chromium and chromium-nickel; nickel alloys, such as Monel and Inconel; and in other combinations especially made for particular corrosive uses. Examples of special types already produced are Hastelloy B, C and F clad to carbon steel, and fine silver clad to stainless steel. Additional combinations are constantly being developed.

An integral and continuous bonded cladding of uniform thickness, and large selection of cladding metals not available by other methods, are some of the advantages claimed for the new process.

The firm's clad plates are produced by heating an assembly of the cladding metal and the base plate, separated by a thin layer of brazing material, while a high vacuum is produced between the two metals and a resulting high pressure is maintained on the exterior surfaces.

No Rolling Required

Since no rolling is required, the thickness of the cladding is uniform and a wide variety of metals may be clad. The brazing material also serves as a barrier preventing carbon migration from the base plate to the clad surface.

These products meet all requirements of the ASME Boiler Code and the API-ASME Unfired Pressure Vessel Code relating to the use of composite or clad materials. A clad nickel-base alloy meeting ASTM material specifications A-263, A-264 and A-265 is available.



Monel-clad tank . . .



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You can cut costs...improve design...simplify purchasing with C-D-F DIAMOND® VULCANIZED FIBRE

If your job is to select a general-purpose insulating material that is low cost, useful for both electrical and mechanical applications, easy to machine and form, consider the advantages of a unique old-timer — C-D-F's Diamond Vulcanized Fibre. C-D-F first made fibre in 1895, back in the early days of the electrical industry, and is today one of the world's largest producers and developers of this versatile material.

OUTSTANDING MECHANICAL QUALITIES

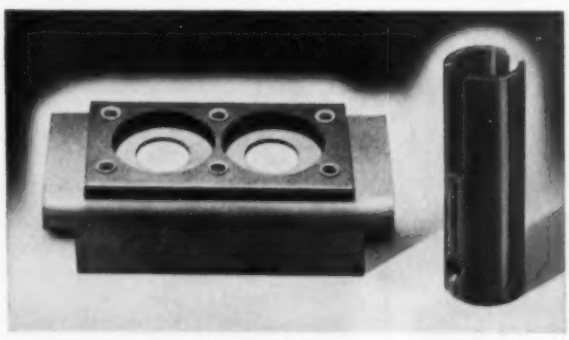
Think what Diamond Fibre can do. Its weight is half that of aluminum, yet it is one of the strongest materials known per unit weight. Tensile strength is 10,000 to 15,000 pounds per square inch. Shearing strength is about 10,000 pounds. Almost as strong as iron, on a weight:strength ratio basis. Diamond Fibre is tough and will not readily crack or shatter under heavy impacts. Its surface is hard and smooth. In forming, fibre can be moistened and dried repeatedly without having its structure, or quality significantly altered. C-D-F makes a special *forming* fibre, using *longer* cotton cellulosic fibers for added strength.

ALSO GOOD ELECTRICALLY

Although given a modest insulation rating for resistance to heat (A.I.E.E. Class A with a temperature limit of 221°F.), Diamond Fibre is often used because of its excellent arc resistance and good dielectric strength. It also has desirable deionizing properties and low heat conductivity. Fibre can be combined or surrounded with moisture-resistant laminated plastic. C-D-F does this in volume for manufacturers of low voltage cartridge fuses and high tension expulsion fuses. Inside is a fibre tube with excellent arc extinguishing properties and high internal bursting strength. Outside is a weather- and moisture-proof shield of rolled phenolic Dilecto.

MANY GRADES AND FORMS

Diamond Fibre sheet and roll grades include Bone, Commercial, and Electrical Insulation (fish paper) NEMA grades. Fibre tubing is normally made only in Bone grade, with rods available in both Bone and Commercial grades. The chart shown outlines the major characteristics of these grades. Special grades include fibre specifically adapted for these mechanical purposes: abrasive, bobbin, flexible, forming, pattern, shuttle, sanitary goods, trunk and case. Built-up sheets can be supplied that are lower in cost than standardard thick sheets.



GOOD EXAMPLES of Diamond Fibre formed and machined by C-D-F. *Left*—An insulating barrier made from three pieces of fibre, punched and formed. Fibre tubing is even used for rivets. *Right*—A fibre tube which has been smooth-sawed to length, punched twice and countersunk. C-D-F can handle the entire job for you, do it faster and at low cost. This includes selecting and testing the proper grade of fibre, machining and inspection, assembling if needed.

C-D-F BONE FIBRE	Hard, stiffest grade. High density. Resists wear, abrasion, has high compressive strength. Good dielectric strength when dry. Super machining qualities. Not recommended for bending.
C-D-F COMMERCIAL FIBRE	Mechanical and electrical grade. Medium density. Tough, pliable. Good mechanical properties. Fair dielectric strength, normally high when dry. Can be bent, punched, and formed.
C-D-F DIAMOND INSULATION	Electrical insulation "fish paper" grade. Unusually free from foreign matter. Withstands extreme bending and forming without cracking. High dielectric strength, except under high humidity.

WHAT IS FIBRE?

Vulcanized fibre is made by combining layers of chemically jelled paper. The chemical compound used in gelling the paper is subsequently removed by leaching and the resulting product, after being dried and finished by calendering, is a dense material of partially regenerated cellulose in which the fibrous structure is retained in varying degrees, depending upon the grade of fibre.

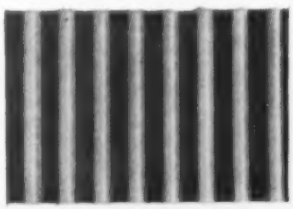
—NEMA Standard VU 1-1.1

VULCOID—A RESIN-IMPREGNATED FIBRE

One of C-D-F's products is a great material called Vulcoid. Vulcanized Fibre is its base, but a special combination of C-D-F resins give Vulcoid a moisture resistance intermediate between vulcanized fibre and that of higher-cost laminated thermosetting plastic. One company uses Vulcoid for electric light switch parts where it cuts their costs and improves their products. Another big outfit uses Vulcoid in place of fibre for its improved electrical properties and good formability. If you have never tested or heard of this C-D-F exclusive, write for details and samples.

MANY LESSONS IN FIBRE KNOW-HOW

At C-D-F there are bins holding thousands of sample Diamond Fibre parts — for electrical, textile, materials-handling, and machinery applications. They represent years of experience in designing and machining fibre to meet exacting needs. Also, they stand for C-D-F's ability to help you solve your specific materials selection problem. Get the facts about C-D-F and Diamond Fibre. Call your nearest C-D-F sales engineer (offices in principal cities), or look in Sweet's Product Design File. Write for samples and the new 1955 Diamond Fibre catalog with complete mechanical and electrical properties, size charts. Enclose your print for quotation—C-D-F is a big, reliable source of supply!



C-D-F CORRUGATED FIBRE is used by manufacturers of distribution transformers for load and oil ducts. The corrugations do not flatten out after baking or in oil at temperatures normal to such units. Also, it is more economical than laminated molded thermoplastic and can be cut to size, with a big saving in time and materials.

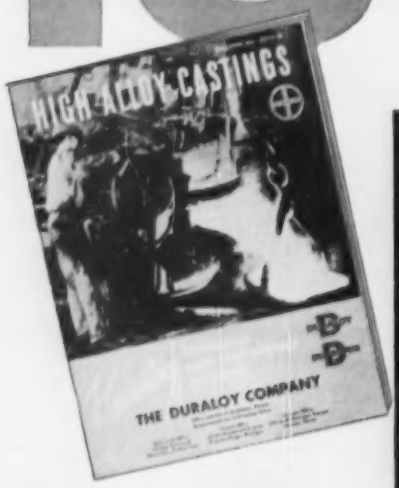
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Continental-Diamond Fibre

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16 pages of useful information about



HIGH ALLOY CASTINGS

DURALOY DURASPUN



This is our New General Bulletin—3354G. It's full of information and data on the chrome-iron and chrome-nickel castings so necessary when corrosion, high temperatures and abrasion must be resisted. It will serve as a general selection guide for those specifying or using such castings.

The bulletin also reviews briefly our experience in both static and centrifugal castings, an experience going back to the pioneering days of 1922 and 1933 respectively. It also tells about our facilities for furnishing castings to any desired analysis, welding, X-ray and gamma ray testing, metallurgical and foundry control.

WRITE or CALL our nearest office for a copy.

We believe you will find it helpful in your work.

THE DURALOY COMPANY

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Aluminum:

Photo-sensitized material for wide use.

A new direct positive, photo-sensitized aluminum sheet can be worked from either positive or negative. It is not necessary to use a darkroom in any stage of the processing.

The low cost and flexible metal medium is said to have many application possibilities, Meta-Positive was developed by Anken Chemical & Film Corp., Newton, N. J. It is designed for use in making templates, and instrument panels, and for printing and pictorial treatment on identification labels, panels, or tags. In many instances, the manufacturers state, it can be used in conjunction with glass cloth.

Resists Heat and Cold

The direct positive photographic metal is available in rolls up to 32 in. wide in any length. It will withstand long submersion in boiling water, and is not affected by extreme cold.

A secret process treatment eliminates the usual bad effect of aluminum on photo emulsions. The face of the aluminum sheeting is treated to retard oxidation. The emulsion is as dimensionally stable as the aluminum base material and will withstand moisture or prolonged sunlight.

Needs No Darkroom

In developing and printing the new metal there is no need for a darkroom. It can be bent frequently without surface cracking and will withstand abnormally heavy handling, scratching, etc. It can be easily cemented to other materials.

Because of the high reflectivity of the metal, the speed of Meta-Positive is said to be greater than that of regular autopositive photographic paper or film.

For positive printing, exposure of a positive original is made through Ankoyello sheeting.

Four simple processing steps are used in the developing.

Packaging:

Dip parts for complete protection.

Peelable plastic coatings made from cellulose acetate butyrate plus certain resins and rust-inhibiting oils, offer protection for valuable tools, gages, components and assemblies from damage both during shipment and in storage.

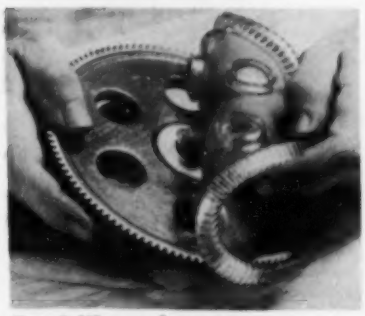
Eastman Chemical Products, Inc., Kingsport, Tenn., says the method of application is simple. The part is dipped into the hot (300°-325°F) butyrate coating composition, withdrawn and allowed to cool. Under ordinary circumstances the part is ready to be handled in less than two minutes.

Coating Peels Quickly

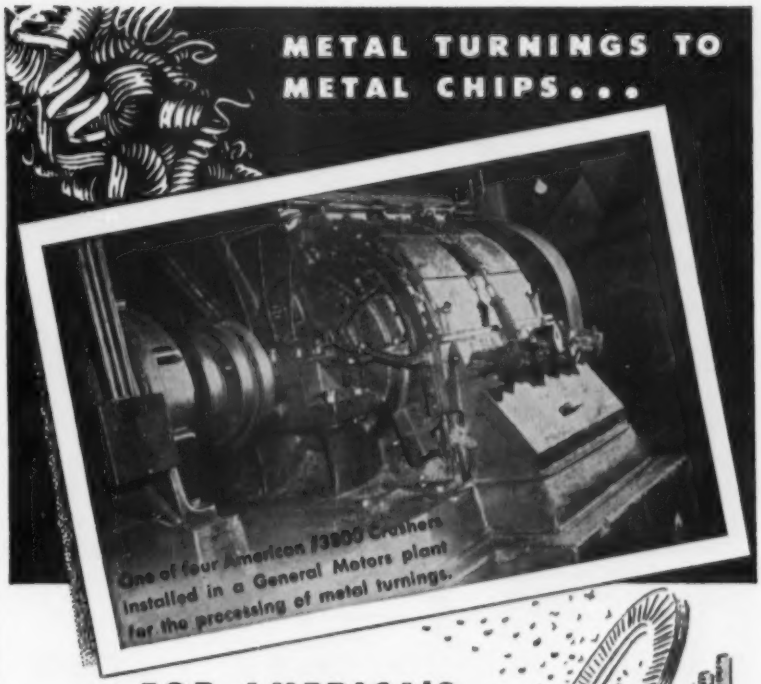
The protection is complete—no further wrapping and, in most cases, no labeling since identifying marks on the part are entirely



Just dip and cool . . .



Peel like a banana . . .



. . . FOR AMERICA'S BLUE CHIP COMPANIES with American METAL TURNINGS Crushers

WHY an AMERICAN installation makes Dollars and Sense:

These cost-conscious companies have long-since learned that American-crushed metal turnings quickly recover an initial American Crusher investment in these important ways:

$3 to $4 Extra Profit Per Ton: With higher scrap values for metal chips over ordinary machine shop turnings, a daily crushing capacity of only 2 tons will produce *$1200.00 per year in extra profits.*

Up to 80% Less Space: Reduction to metal chips solves many expensive handling and storage problems, and allows easy briquetting.

30-50 Gallons Per Ton Cutting-Oil Recovery: An important reclamation that adds new profits with an American Crusher installation.

PROMINENT AMERICAN CRUSHER USERS

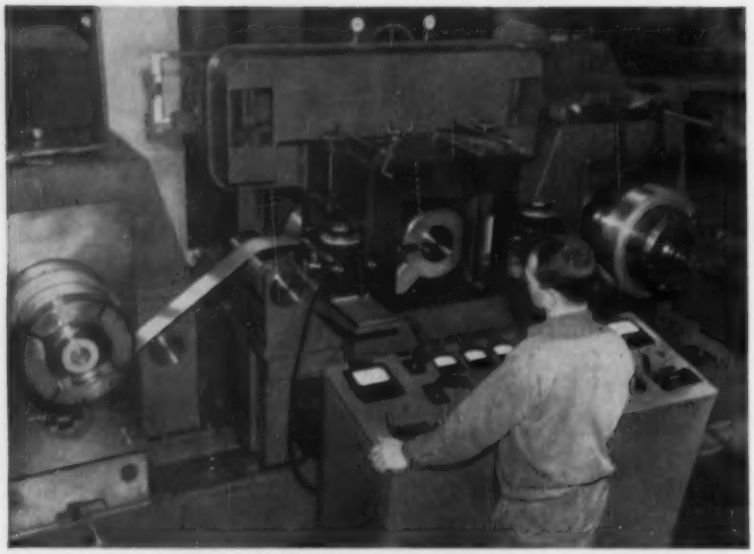
The users of American Metal Turnings Crushers read like a "Who's Who" of American Industry. Included are such names as:

GENERAL MOTORS • FORD TIMKEN • ALLIS-CHALMERS GENERAL ELECTRIC • BUDD WHEEL • CHRYSLER.



Write for Bulletin "METAL TURNINGS CRUSHERS"

American PULVERIZER COMPANY
Originators and Manufacturers of Ring Crushers and Pulverizers
1439 MACKLIND AVE.
ST. LOUIS 10, MO.



TYPICAL OF NEW PRODUCTION EQUIPMENT installed in the Beryllium plant is this Sendzimir cold-rolling mill which handles wider strip faster than previous equipment, while its precision makes possible greater dimensional control and quality of product.

THE NEWS FROM BERYLLIUM IS EXPANSION

New production facilities improve quality, expand size, tighten tolerance range and increase availability of "Berylco" Beryllium Copper

The laboratory stage of beryllium lasted from its discovery in the 1790's until early in the 1930's. The last two decades might be termed the pilot stage, for the value of beryllium and its alloys, particularly beryllium copper, was being proved throughout industry. Indications from large-volume users are that a new era is on hand—the mass-production era. To make this possible, the world's largest producer, The Beryllium Corporation, has just completed a multimillion-dollar plant improvement program as part of an overall expansion plan.

This program encompasses the whole production set-up, from the ball mills that grind ore to the finishing mills. Cold-rolling capacity, for instance, has been multiplied by the installation of new strip mills. New finishing mills not only increase capacity, but make possible closer tolerances and new strip sizes. Sufficient economies have already been realized to warrant price reductions on strip in lighter gages to large volume users. A new extrusion mill supplements existing hot-rolling facilities and provides sizes, shapes and forms not produced heretofore. Thus beryllium copper is now being made available in greater quantities, more numerous forms, and improved quality.

Write for technical information, engineering help or free testing samples.



NEW MARKETING TECHNIQUES ALSO. Leading nonferrous distributors the country over are now carrying a wide stock of beryllium copper products, ready for immediate delivery. Write for the name of the distributor nearest you.



PRODUCT DIRECTORY. This 20-page booklet contains the most complete listing of beryllium alloys and forms available anywhere. Send for your free copy today.

BERYLCO®

THE BERYLLIUM CORPORATION

DEPT. 5E, READING 6, PA.

STOCKED BY WAREHOUSE DISTRIBUTORS THE COUNTRY OVER

visible through the transparent coating. Parts so protected are instantly available for use. The coating peels away quickly and easily.

The coating is re-usable, having undergone no chemical change, and can be remelted over and over again.

Lightweight Protection

Butyrate peelable plastic coatings provide high protection against abrasion, corrosion, contamination and tampering and are at the same time lightweight and of minimum bulk.

A properly compounded plastic coating of this type will meet the requirements of Military Specification JAN-C-149 for "Compound, Protective, Strippable (Hot Dipping)," Type II. This composition is mentioned in Paragraph 3.5.5 of Specification MIL-P-116B, "Preservation, Methods Of." Methods of application are outlined in the Services' manual entitled "Preservation, Packaging and Packing of Military Supplies and Equipment."

Diecasting:

Light, intricate parts easily produced.

Design change-over to diecast components in new models of industrial and home machine tools is resulting in lighter weight and reduced production and assembly costs, because of the one-piece construction inherent in the diecasting process.

Streamlined functional parts made of certified zinc or aluminum diecastings meet the machine tool industry's rigid requirements of impact resistance, close tolerances and attractive appearance.

A typical example is a rugged diecast aluminum housing which protects a lightweight power belt sander. Weighing only 10 pounds, the low-priced 3-in. belt sander, designed primarily for the "do-it-yourself" market, duplicates many of the features of heavier industrial equipment.

Manufactured by the Porter-

Cable Machine Co., Syracuse, N. Y., the secret of the sander's light weight is its diecast aluminum housing which is a combination handle, motor housing and belt frame.

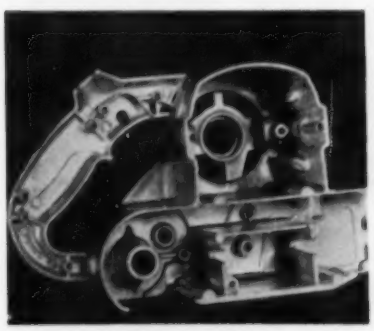
Each section of this one-piece diecasting is separated by thin walls, and is intricately cored for precision assembly of the unit's components. In assembly, the motor, bearings, gearing, switches, drive linkage and wiring are inserted in this close-tolerance diecast frame.

By specifying diecast aluminum for the belt sander's housing, Porter-Cable eliminated expensive machining operations required in other production techniques. Diecasting of the aluminum 380 alloy in one piece also eliminated housing assembly costs while simultaneously providing precise coring for component assembly.

Appearance Improved

Appearance is enhanced because diecasting permits streamline design and produces a smooth surface finish requiring minimum polishing. This lightweight one-piece aluminum diecast housing cut manufacturing costs and enabled Porter-Cable to offer the home workshop enthusiast a full-size belt sander at a moderate price.

Because of its straight-line sanding action, this Porter-Cable belt sander sands right up against corners, eliminating hand finishing. A trigger switch in the handle, with a holding lock-button, provides instantaneous control for the sanding belt, which travels at 850 sfpm.



Intricate diecasting . . .



. . . for the finest bearing bronze available from stock

Bunting Bronze Bearings and Bars are made of a special Bronze alloy developed in Bunting metallurgical laboratories through study of innumerable bearing applications and many rigid tests. Known as Bunting No. 72 bearing bronze alloy (SAE 660) this Bronze embodies superlative anti-friction properties together with easy machineability and long life.

HE HAS IT

Your Bunting Distributor carries in stock for your money saving convenience completely machined and finished Bunting Standard Stock Industrial Bearings, Electric Motor Bearings and Precision Bronze Bars in a complete range of sizes, meeting all your usual production and maintenance needs. You will find him listed in the classified section of your telephone book—most likely under the heading Bars, Bronze or Bearings, Bronze. Your Bunting Distributor is an industrial distributor or a specialist in certain industrial items. He has been especially selected for his responsibility and his understanding of bearing requirements. Ask him for the Bunting Catalog or write.



Bunting®

BRONZE BEARINGS • BUSHINGS • PRECISION BRONZE BARS
THE BUNTING BRASS AND BRONZE COMPANY
TOLEDO 1, OHIO
BRANCHES IN PRINCIPAL CITIES



How can production costs be cut as much as 50% with Enamelstrip Pre-Coated Coil? The Kroder Reubel Company, Brooklyn, N.Y., decided to find out—*and now is finding out!*

The moment Kroder Reubel started fabricating its curtain rods from Enamelstrip, it did away with seven costly operations in the finishing department . . . eliminated the paint lumps that spraying used to leave on their rods . . . lowered insurance rates . . . and put an end to a neighborhood paint fume problem.

An unusual story on production savings, isn't it? But it's still just one example of how hundreds of manufacturers all over the country are improving products and cutting costs with Enamelstrip Coil.

Factory paint shops—with all the expenses of cleaning, tumbling, spraying, dipping, rustproofing, baking and drying—are no longer necessary. Scrap losses are being reduced to a minimum by feeding continuously from a coil of the exact size of Enamelstrip required. Products aren't being returned to manufacturers due to imperfections on the finish.

Fitting Enamelstrip Pre-Coated Coil into your production set-up should be easy, too. Widths from 7/32 to 30 inches in gauges from .006" to .040" can be ordered in steel, brass, zinc, aluminum, or any metal that takes a coating. Any color on one or two sides or different colors on each side can be provided to meet individual specifications. Just call, or write.



Products like the ones above—which were made from Enamelstrip—must have a perfect finish. This is another advantage Enamelstrip Pre-Coated Coil offers manufacturers. It can take severe stamping and deep drawing—can even be bent 180°—without paint finish cracking, chipping or flaking.

THE COATED COIL CORPORATION

511 West 30th Street, New York 1 • LOngacre 5-3161

National Sales Representatives for Enamelstrip Corp., Allentown, Pa.



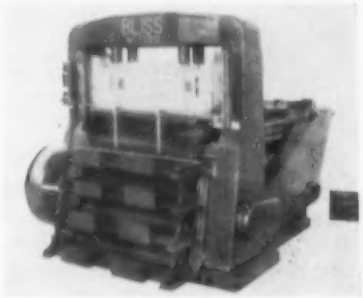
NEW EQUIPMENT

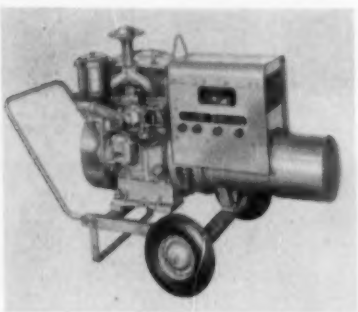
New and improved production ideas, equipment, services and methods described here offer production economies . . . for more data use the free postcard on page 121 or 122

Scroll shear has faster speeds; handles larger sheets

High-speed blanking of scroll strips for can ends, bottle caps and jar tops is accomplished on a new scroll shear. With its wider bed it handles larger sheets, up to 36 in. square, which allows more strips per sheet. Built for precision feeding and trimming at high speeds, the No. 1100 can be arranged for automatic or hand feeds. It is equipped with magnetic or mechanical feed bars and a new intake trimming slitter. The heavy one-piece frame is made of cast Meehanite for extra rigidity. Ample room is provided for new dies, that can easily be mounted in die sets with guide pins. *E. W. Bliss Co.*

For more data circle No. 29 on postcard, p. 121.





Machine welds, cuts, solders, brazes, or hardsurfaces

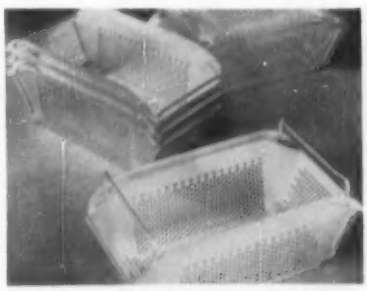
Lightweight, small space requirements, and low cost in a heavy duty unit are advantages claimed for the WN-180 engine-driven arc welder. Weighing only 425 lb, the unit has a service range of 20 to 200 amp, ample capacity to take care of practically any welding job, it is stated. Outside dimensions, 45x29x21 in., make it suited for jeep or small truck mounting. A sturdy, detachable, 2-wheel mounting is also available. The operator merely plugs in to the range he desires—low, medium, or high—and starts welding. Unit is powered with an industrial 12-hp, 2 cylinder, 2000 rpm, Winconsin air-cooled engine. *Harnischfeger Corp.*

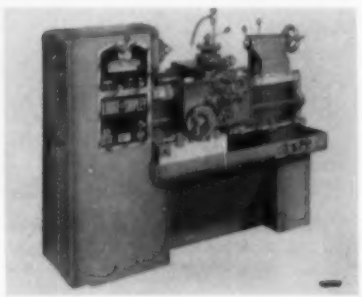
For more data circle No. 30 on postcard, p. 121.

Strength and rigidity with rapid draining feature

NesTier perforated stainless steel baskets combine strength and rigidity of the standard sheet steel box with the rapid draining and easy cleaning features of the basket. Of all-welded, die-made construction, the baskets are available in 5 different sizes ranging from 12 to 36 in. long. The units can be supplied in various types of stainless steel, in aluminum or cold rolled steel. Perforation sizes vary. With the perforated baskets parts or products can be handled throughout all production operations in the same container. Filled baskets tier in rigid stacks; contents are accessible at double hopper ends. *Chas. Wm. Doepke Mfg. Co., Inc.*

For more data circle No. 31 on postcard, p. 121.



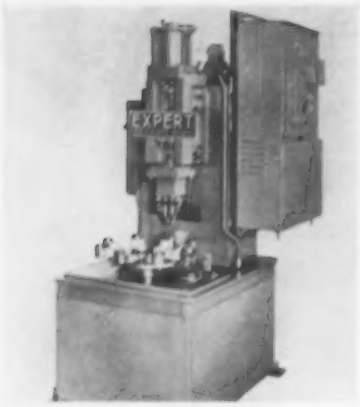


Production lathe offers speed and power combination

An all-new 10-in. Hi-Turn lathe is designed specifically for production operations, offering exceptional speed and power at a new low-cost. The Hi-Turn incorporates features normally considered optional or extra equipment, and eliminates the leadscrew rarely required for production operations. A feed rod is used to provide turning, boring and facing operations. An all new headstock has 9 spindle speeds from 3000 down to 202 rpm in the high range. Quick change gear box is totally enclosed. All nine feeds and speeds are color coded; selections are made with two levers. *Lodge & Shipley Co.*

For more data circle No. 32 on postcard, p. 121.

Turn Page



Compact machine welds 720 pieces per hour

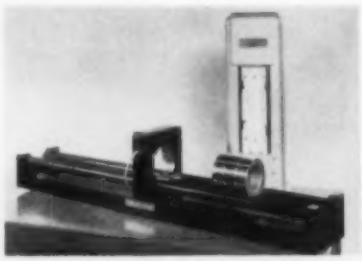
New 8-station index machine for a wide variety of spot, projection and arc welding production operations will produce up to 720 welded assemblies per hour. It features an all-mechanical drive. Basically the welder consists of a welded steel frame, standard or special welding head, an electrical control cabinet, a 24-in. index table and a ½ hp motor-driven mechanical drive enclosed in the base of the machine. Manual loading, automatic index cycle and automatic part ejection are provided for the welder operation. The welder illustrated spot welds stamped steel automotive engine oil breather assemblies. Parts are manually loaded while the machine goes through its automatic index cycle. In this operation a 2½-sec welding cycle and 2-sec index time are provided. Parts are automatically ejected by an air cylinder from the fixture after welding has been completed. *Expert Welding Machine Co.*

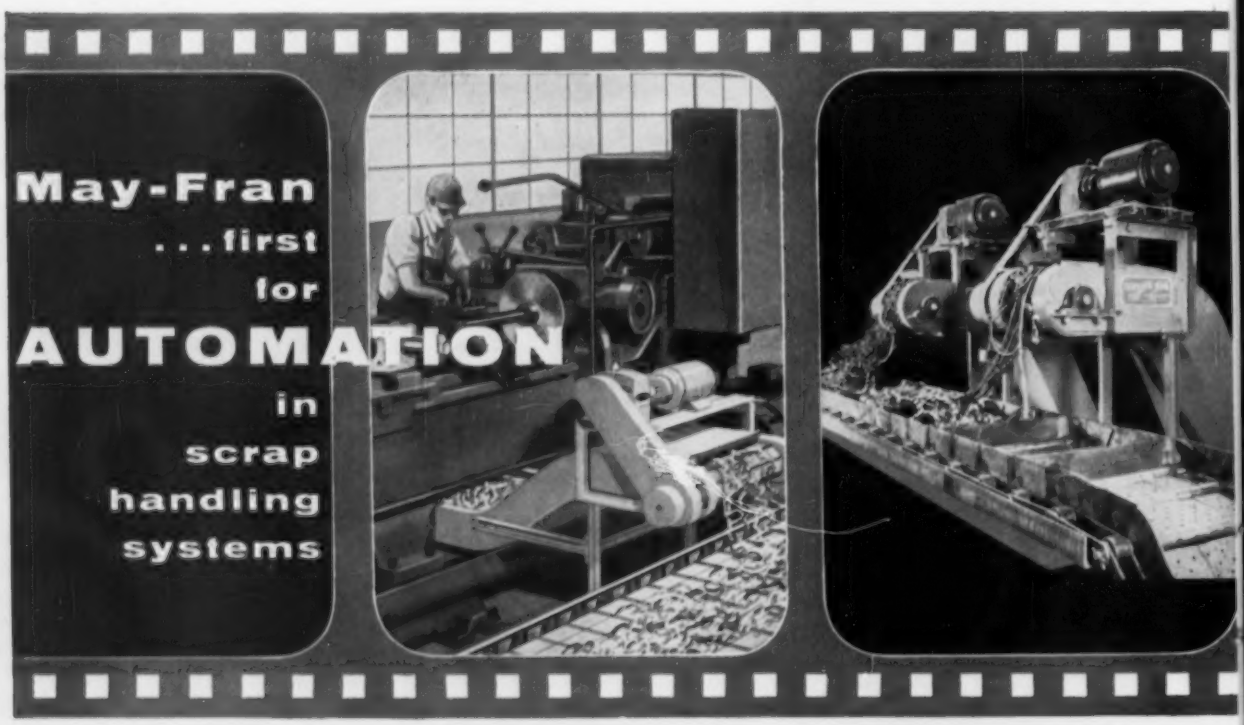
For more data circle No. 33 on postcard, p. 121.

Checks Bourrelet diameter of 105 mm shells

Sheffield Plunjet machine control unit mounts on a No. 3 Cincinnati centerless grinder for controlling the grinding of Bourrelet diameter of 105 mm shells. Three matched Plunjets are mounted in the ring to gage the diameter of the shell as it passes from the grinder along the ways of the gage. Position of the floats in the two column Precisionaire indicates whether the part is within tolerance or the amount it is out. Similar equipment for other grinders is available. *Sheffield Corp.*

For more data circle No. 34 on postcard, p. 121.





The CHIP-TOTE conveyor permits complete utilization of machine tools by eliminating shut-down for manual scrap removal.

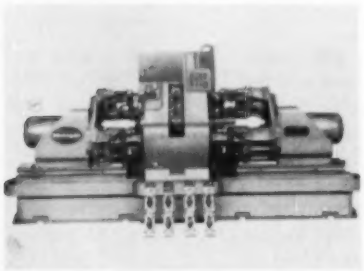
It handles a continuous flow of hot, wet or dry chips, turnings and borings from any multiple spindle automatic machine.

Small sized, general purpose centerless grinder



Especially designed for the wide range of metallic and non-metallic parts ranging up to ½ in. diam, lower power consumption, reduced floor space, and lower capital investment make this machine an efficient, low cost producer of small shafts, drills, pins, clock parts, instrument parts, etc. The grinding wheel spindle is mounted in Cincinnati's Filmatic spindle bearing. Bearings are self adjusting for heavy roughing cuts or light finishing cuts; require no maintenance for service life of the machine. The regulating wheel speeds are infinitely variable, from 22 to 300 rpm to permit selection of the exact speed required for efficient cutting on any particular job. Grinding wheels are 16 in. diam with 10-in. hole and maximum 4 in. width. All electrical motors are enclosed within the machine to protect them from dust, grit and cutting fluid. *Cincinnati Grinders, Inc.*

For more data circle No. 35 on postcard, p. 121.



Special machine handles 1800 hinges per hour

A double end, way type hydraulic feed, trunnion type machine drills and reams hinge pin holes in automobile door hinges. Feed unit ways are hardened, ground and automatically lubricated. All electrical and hydraulic installations are built to JIC standards. Drill and reaming heads are pot type, equipped with ball bearings. It is a 4-place, 4-station machine with power operated trunnion type fixtures. Part locating and clamping blocks are interchangeable to handle any size hinge. Hinges are automatically ejected. *Michigan Drill Head Co.*

For more data circle No. 36 on postcard, p. 121.

Turn Page



Now is the time to put AUTOMATION to work . . . Now is the time to cut production costs . . . May-Fran engineers design and build complete scrap handling systems for the automatic removal of machine turnings or chips. May-Fran conveyors will transmit scrap to ultimate point of disposal.

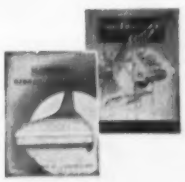
Press Scrap systems can be made completely automatic. Hinged-steel belt will take scrap from presses, handle it through blanking, shearing, forming and baling processes, and deliver it to rail cars.

May-Fran is prepared to engineer, fabricate and install complete conveyor systems to your specifications.

Write today for complete information on how an automatic scrap removal system will cut your production costs.

Bulletin MF-530 describes the new Hinged-Steel conveyor belt.

Bulletin MF-640 describes the Chip-Tote conveyor which removes scrap from operating machines.



DESIGNERS AND ENGINEERS OF COMPLETE SCRAP HANDLING SYSTEMS

MAY-FRAN ENGINEERING, INC.

Hinged-steel belting handles scrap as well as hot heavy and abrasive castings. Belt is economical . . . maintenance-free.

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CLEVELAND 12, OHIO



Everyone recognizes this as a sign of law and order . . .

And smart gear users know this CINTI is the sign of *good* gears made to *your* specifications.

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RENT OR BUY
SILENT HOIST
LIFTRUK
on the
"DAY-BY-DAY
EARN-ITS-WAY
PLAN"

3-5-7½-10-15 ton CAPACITIES

Exclusive-FLUID DRIVE



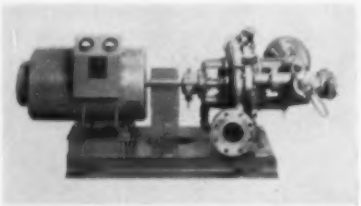
If you can reasonably use a Heavy Duty LIFTRUK for at least two hours a day average, to improve the movement of goods in process or reduce materials handling operations, then you should be interested in this unusual "rent-or-pay-as-you-use" plan. Proper cost accounting methods often show that man-hours saved, storage space gained, or time in transit reduced, add up to a profit well above the payments required for LIFTRUK for purchase or rental charges.

Write for "Earn-Its-Way" Plan to

SILENT HOIST & CRANE CO.
Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment
851 63rd Street, Brooklyn 20, N. Y.

Packaged generator sets

For emergency lighting or where dependable lighting or power supply is required, a line of ac single phase and 3 phase Turbo generator sets are compact ready-to-be-installed power units. They require no switchboard. Ratings from 3.75 to 62.5 kva are available. A Coppus type TF steam turbine

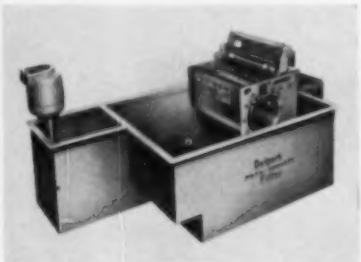


with constant speed governor, excess speed safety trip, carbon ring glands, sentinel relief valve and steam strainer is connected to Electric Machinery Mfg. Co.'s packaged 1800 rpm generator. All are mounted on a welded structural steel base plate. *Coppus Engineering Corp.*

For more data circle No. 37 on postcard, p. 121.

Rotary-gravity filter

Continuous full flow filtration of coolants, cutting oils and numerous industrial fluids is accomplished in less floor space with the Delpark Roto-Gravity filter. Permanent type filter screen removes particles to 0.002 in. size. Unit is self-cleaning through reverse flush



principle operating on a time lapse sequence. Residue thus cleaned from bar stock type screen is removed by chain driven flights. Filter requires attention only for removal of residue and sludge from the tote box under the carry-off shelf. Sizes are available for capacities from 20 to 100 gpm. *Industrial Filtration Co.*

For more data circle No. 38 on postcard, p. 121.

Electric chain hoist

Designed to serve for its normal life without maintenance an electric chain hoist features shock-proof pushbutton control, sealed-in lifetime lubrication, self-adjusting heavy duty brake, overload protection and safety limit switches. Components are fully enclosed and protected. A jam-proof chain guide and non-kinking flexible link Cm-Alloy chain permit the Lodestar to be used for extreme angle pulling. The single



phase model can be used for side pulling. Interchangeable suspensions are another Lodestar feature. Capacities range from ⅛ to 1 ton; operate on single phase 115 v and 3 phase 208-220/440 v 60 cycle power. *Chisholm-Moore Hoist Div.*

For more data circle No. 39 on postcard, p. 121.

Bronze globe valve

Remarkable performance record claimed for a new globe valve is made possible by a combination of two radically new elements. The first is a new seating metal named Brinalloy. This alloy is not surface-hardened, but hard all the way through. Second element is the flat-seat design of the valve. Brinalloy is so resistant to wear and corrosion that it can be fused permanently into the valve for its entire service life. Exterior design is simple and streamlined in appearance. The valve is operated by the Non-Slip handwheel; has the Stemalloy stem which eliminates valve failure from stem-thread wear. *Lunkenheimer Co.*

For more data circle No. 40 on postcard, p. 121.

Turn Page



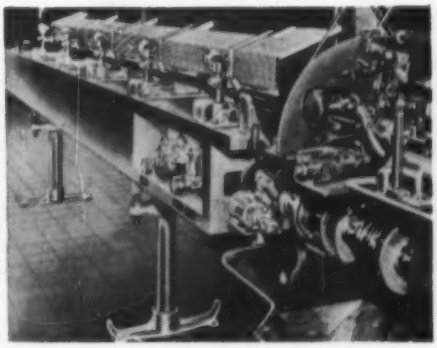
Why let the 4th DIMENSION limit your machine tool output?

A trip to the washroom or tool crib, a halt for feed finger repair, a spinning empty chuck—these interruptions to the steady flow of production can never be made up . . . for TIME, the 4th Dimension, waits for neither man nor machine.

Over 150 firms have learned how to use every minute of every shift for continuous, 4th Dimension production. Here's how . . .

Lipe A.M.L. Bar Feed Eliminates Time Losses, Increases Output 30% or More

The Lipe Automatic Magazine-Loading Bar Feed is an air-operated attachment which holds an 8-hour supply of bar, rod or tubing and feeds it continuously to any machine equipped with a fixed stop. There are no feed fingers to break down—nothing to scratch or mar polished stock. It will feed any length in one feed-out, thereby cutting cycle time. Remnants are ejected automatically. Idle operation ("cutting air") is eliminated.





Send for this free book. Shows how to convert your machine tools to 4th Dimension Production.

LIPE-ROLLWAY CORPORATION
Syracuse 4, N.Y.

Send me free book on how to gear machine tools to the steady flow of Time.

Name ..... Title .....

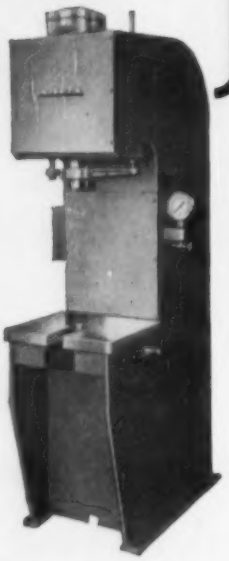
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City ..... Zone ..... State .....

PRICE LIST

ON HANNIFIN STOCK HYDRAULIC PRESSES



1-TON	$ 552
2-TON	$ 627
5-TON	$1,286
8-TON	$1,581
10-TON	$1,855
25-TON	$3,681

Prices complete with motors and starters F.O.B. our press plant, St. Marys, Ohio, subject to change without notice.

DELIVERY FROM STOCK

Demand for these popular presses is so consistent we are able to produce them in quantity and pass the savings along to you.

Construction-wise and quality-wise these small general-purpose presses are identical to the larger Hannifin presses, up to 150 tons. Special, optional controls when needed.

WRITE for complete information on the Hannifin Hydraulic Press you're interested in.

HANNIFIN

HANNIFIN CORPORATION, 513 S. WOLF ROAD, DES PLAINES, ILLINOIS



Handling Coil Stock?

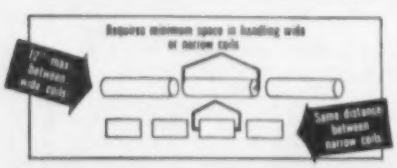
CHECK THESE

C-F LIFTER

ADVANTAGES

- 1 Lifter handles wide range of coil sizes
- Requires minimum of only 10" to 12" between piles —saves storage room
- 1 man operation — eliminates hookers
- Positive grip on coil — no damage to material

• C-F Coil Lifters are saving time and labor in many plants and warehouses because they can pick up, carry and set down a coil of steel faster and safer than any other method. Infinite jaw openings permit handling a very wide range of coil widths . . . carrying legs open fast, stay open until operator closes them on coil. Narrow legs require minimum space between piles – a space saving advantage. Made in motorized models for crane cab or pendant operation as well as manual types with chain wheel, in capacities from 3 tons up. Powered Rotating Heads available. Opening ranges to suit your requirements. Write for illustrated Bulletin.





CULLEN-FRIESTEDT CO.

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See us at booth 914-916 Modern Material Handling Exposition—Chicago

Exposure calculator

Complex mathematical computations involved in determining exposure times in gamma radiography are rapidly and easily accomplished with a new slide-rule-type calculator. The many variables characteristic of any radiographic problem are quickly integrated into a single calculation. Provision is made for evaluating the type of film used, photographic density required, thickness of the steel specimen, source-to-film distance, and strength of the cobalt source. Exposures for radium sources can also be calibrated. *Technical Operations, Inc.*

For more data circle No. 41 on postcard, p. 121.

High stacking walkie truck

An electric-powered JackStacker with a double telescopic mast is available for stacking operations

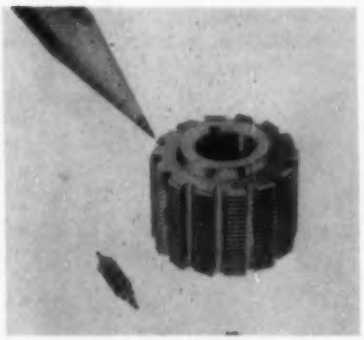


where a high lifting height is required and aisles are narrow. The Walkie truck can stack a 6000-lb load to a height of 100 in. It is maneuverable and easy to handle; is 26 in. wide at its base and can right-angle stack in aisles only 6 ft wide. Articulated linkage and stabilizing casters assure added stability for high stacking operations, easier steering and uniform traction over rough floors. All controls including brake are located in the handle head. *Lewis-Shepard Products, Inc.*

For more data circle No. 42 on postcard, p. 121.

Fine pitch hobs

Redesigned to meet all revised ASA standards, a line of fine pitch hobs are for cutting gears with a diametral pitch of 20 to 120.

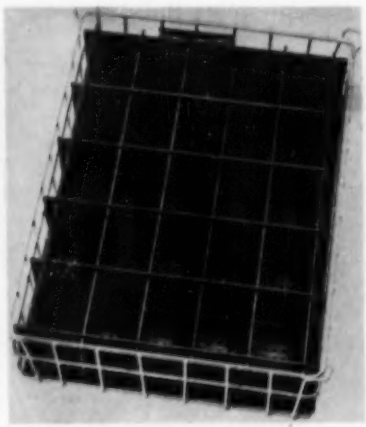


They are available in 3 diameters of bore: 0.315, 0.750 and 1.250. They range in size from ¾ in. diam x ½ in. to 2½ in. diam x 2½ in. Fifty-five different sizes are available. *Illinois Tool Works.*

For more data circle No. 43 on postcard, p. 121.

Removable inserts

The degreasing of parts so that they are not touched by metal has been solved by using removable bottoms and divider inserts made of Presdwood for wire baskets. Bottoms are perforated, and the



dividers are slotted to fit together and form an egg-crate grid. Parts put into the baskets can touch only the hardboard, not each other or the wire basket. The inexpensive nonmetallic material is not affected by vapor degreaser fluid. *Masonite Corp.*

For more data circle No. 44 on postcard, p. 121.

Turn Page

Here's the best shortcut in the field of organic finishing

One operation usually removes paint, rust and oil at the same time.

One tank of Oakite Rustripper frequently does all these jobs: (1) strip rejects and conveyor hooks; (2) pickle rusted stock; (3) prepare reconditioned products for refinishing operations.

One tank may eliminate many tanks used in ordinary cycles.





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Twin-ram marking machine

In a new roll marking machine a pneumatic pressure ram for depth of mark is combined with a pneumatic die slide for roll marking round and flat surfaces. The twin-ram head can be mounted horizontally, vertically, or at an angle.



Frame of the machine is tilted at a 20° angle to facilitate loading and unloading. Model 354 marks bearing races 1 to 6 in. diam. Cyclomatic Control and air ejection require operator merely to load piece parts. *Noble & Westbrook Mfg. Co.*

For more data circle No. 45 on postcard, p. 121.

Palletizing container

A recent development in the pallet field is a canvas container that permits handling bulk solids and at the same time eliminates boxes, with marked savings in handling costs. Supplied with aluminum or steel base and tiering posts, the canvas container collapses flat with



the base when not in use or for return shipment. The container can be furnished in canvas, duck, water resistant materials, rubber or plastic. It has zipper, straps, or other type closures for protection of contents. *Paltier Corp.*

For more data circle No. 46 on postcard, p. 121.

Ready-power fork truck

Equipped with a 12 hp water-cooled engine, the load-mobile ready-power gas-electric fork truck uses a direct connected generator which serves the double function of starting motor and generator. The entire power plant is con-



tained in one unit for ease of service and replacement. Fuel tank under the operator's feet permits reduction in height of the ready-power unit. The truck has speed-governed gas-electric drive with no clutches or transmission necessary. Operation is controlled by a governor. Conversion to straight battery power is easy. *Market Forge Co.*

For more data circle No. 47 on postcard, p. 121.

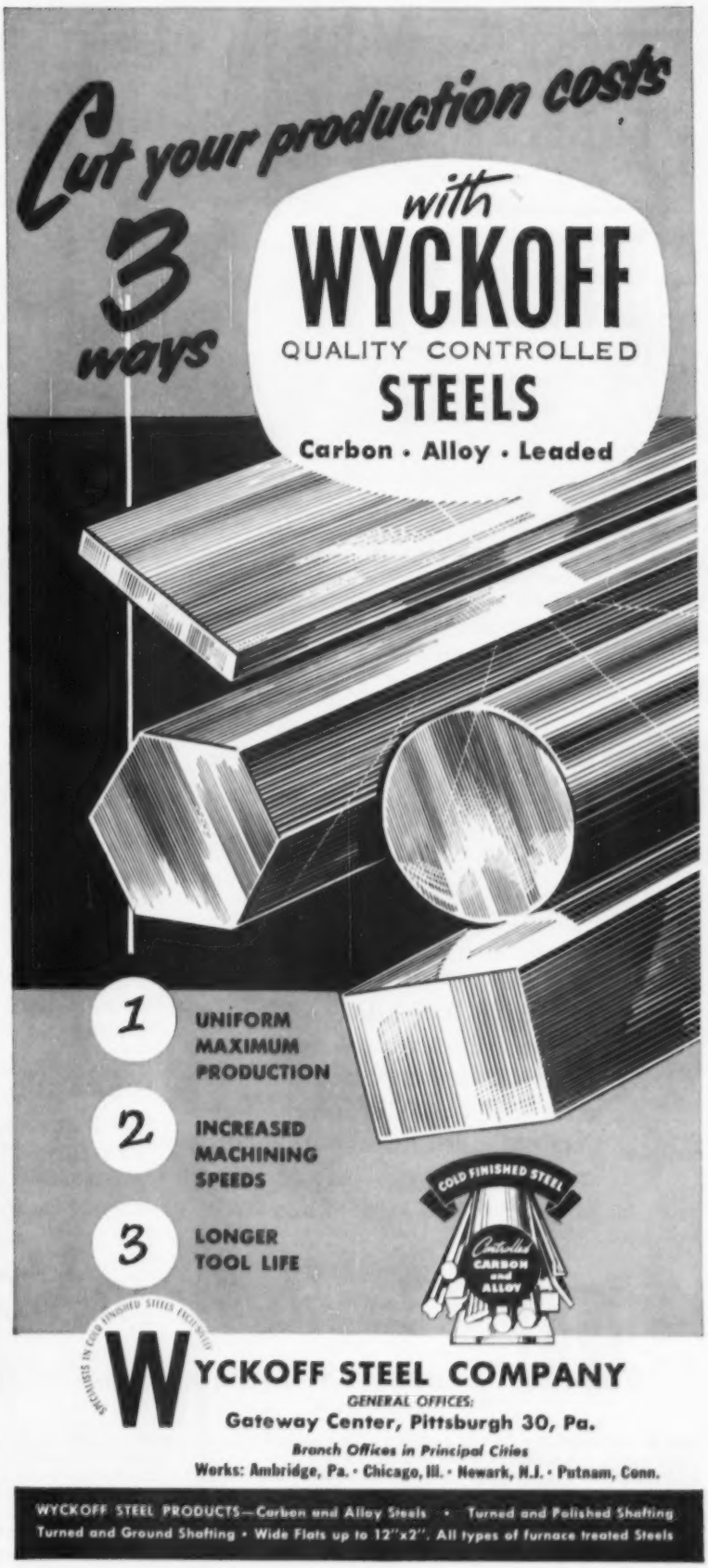
Copper in cartons

Sixteen-ounce soft roll roofing copper, in standard widths from 6 to 20 in. comes in sturdy spiral wound kraft cartons, clearly marked as to width and weight. Cartons are



rugged, have recessed ends for ease and safety in handling, are easily stored and inventoried. Surfaces are protected and metal is kept clean, dry and bright while roundness of coils is maintained. *Chase Brass & Copper Co.*

For more data circle No. 48 on postcard, p. 121.



CARBON, ALLOY, STAINLESS-CLAD AND OTHER FERROUS AND NON-FERROUS METALS



name your dish

You name it and we'll supply it. Claymont Flanged and Dished Heads are available in carbon, alloy and stainless-clad steel in diameter sizes from 9 inches to 19 feet—in thickness from 3/16 inch to 6 inches. Our flanging department can also handle forming operations on both ferrous and non-ferrous metal supplied by you.

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2680

The Iron Age SUMMARY. . .

Steelworkers will win wage raise without strike . . . But steel prices will also climb . . . Gray market follows inventory imbalance.

Steelworkers Talk Tough . . . Steel labor will take a tough attitude in wage negotiations which will soon open. Current steel prosperity has placed labor in the best bargaining position in years. Wages are the only issue, so the steel union will press for all the traffic will bear. It may settle for 8 to 10¢ an hour, but will put up a stiff fight for more.

Steel companies will fight to keep wages within reasonable bounds. This year's first quarter earnings were exceptional. But management is striving to increase stockholder dividends, which have lagged behind other industries, and is in no mood to absorb more operating costs.

Strike Is Unlikely . . . No strike is in sight. Both sides now seem willing to settle the single issue —wages—at the bargaining table. There will be sharp words but the fact is that a good relationship now exists between steel labor and management.

For steel users the result will be higher prices. Producers will not be under as much pressure to go easy, as they were last year, when a 12¢ wage package brought a $3 a ton price increase. Other operating costs have risen and the mills feel they have to recover these costs to maintain a good earning position.

Prices Will Rise . . . The outlook: At least a $4 per ton average price increase if the wage raise follows the pattern.

At the moment the wage-price prospect is the least of any steel consumer's worries. He's got his hands full rounding up his tonnage requirement. And he realizes that chances of relief from the pressure through the third quarter are slim.

Many customers are finding their inventories out of balance. They are still struggling with the problem of delayed deliveries. But even when deliveries are on schedule, urgently needed sizes and analyses may not be available. This is happening in bars, will occur with other items.

Gray Market Exists . . . Some people in the steel business are now willing to admit that a small gray market exists in some products. Conditions are right, and so-called brokers are offering tonnages at fancy prices. They are getting a few takers.

The tinged market is the result of this observed imbalance in inventories. Buyers have to go to expensive sources to fill inventory gaps. This is not yet widespread, but occurs often enough to establish the gray market's existence. For practical purposes, most steel products are now booked through the second quarter.

Steel Output, Operating Rates

	This Week†	Last Week	Month Ago	Year Ago
Production (Net tons, 000 omitted)	2,328	2,316	2,316	1,654
Ingot Index (1947—49=100)	144.9	144.0	144.0	103.0
Operating Rates				
Chicago	99.0	99.5	98.5	79.0
Pittsburgh	99.0	99.0	97.0	68.0
Philadelphia	95.0	96.2	96.0	59.0
Valley	98.0	95.0*	95.0	66.0
West	97.5	100.8*	94.5	71.5
Detroit	94.0	90.0	91.0	75.0
Buffalo	105.0	105.0	105.0	67.5
Cleveland	100.6	98.2*	109.5	71.5
Birmingham	93.5	93.5	90.5	56.5
S. Ohio River	94.7	93.5*	92.0	80.0
Wheeling	99.0	98.0	95.0	92.0
St. Louis	106.1	98.1	95.0	72.5
Northeast	104.3	104.3	97.5	52.0
Aggregate	96.5	96.0	96.0	68.5

*Revised. †Tentative

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite prices				
Finished Steel, base	4.797	4.797	4.797	4.634
Pig Iron (Gross ton)	$56.59	$56.59	$56.59	$56.59
Scrap, No. 1 hvy (gross ton)	$35.00	$35.67	$37.00	$27.25
Nonferrous				
Aluminum, ingot	23.20	23.20	23.20	21.50
Copper, electrolytic	36.00	36.00	36.00	30.00
Lead, St. Louis	14.80	14.80	14.80	13.80
Magnesium, ingot	29.25	29.25	29.25	27.75
Nickel, electrolytic	67.67	67.67	67.67	63.08
Tin, Straits, N. Y.	91.125	91.375	91.00	93.50
Zinc, E. St. Louis	12.00	12.00	11.75	10.25

Inventory is Big Headache

No immediate cure seen for inventory imbalance facing most consumers . . . Competition for most products will limit buildup for weeks to come . . . Plate tight.

◆ INVENTORY imbalance is now a chronic headache for most steel consumers. And there is no immediate cure in the works as continued competition for most products will prohibit any inventory buildup for a period of many weeks.

Total steel production appears to be making the grade to the extent that few, if any, production holdups have been attributed to a steel shortage. However, inventories are way out of balance for many users.

This imbalance, rather than overall shortages, results in most of the scurrying to warehouse and premium price sources of supply.

Consumers who bet on an easing of automotive demand in June or July will be on the short end. These bets have already been faded by Detroit automakers and others who will walk off with the cold-rolled sheet and coil stakes.

Bar inventories are one-sided in many cases. Consumers frequently find themselves short of specific sizes and specifications. There is no particular pattern except that once a consumer gets low on any particular product, it is difficult to recover an adequate inventory.

Plate consumers may be in the tightest fix of all. Many had counted on a slipping of automotive orders to ease more ingots for plate. But even if any slack in automotive should occur in late summer, appliance makers indicate they are willing to step in.

Bottleneck in the plate picture occurs at the ingot level. A comparatively low profit item, demand for plates takes second place behind cold-rolled sheet. Plate rolling capacity is not a critical problem, but obtaining ingots for plate is.

SHEETS AND STRIPS . . . Clamor for deliveries is mounting in **Detroit.** Cold-rolled sheet delivery is running anywhere from 30 to 60 days behind with no letup in sight. **Chicago** reports strong bookings for 3rd quarter in both cold-rolled and hot-rolled. Some out-of-area producers are going on quotas for entire 3rd quarter. Strip is still available for August delivery. Third quarter order bookings are still being accepted by a large eastern producer on hot-rolled, cold-rolled and galvanized. Several **Pittsburgh** mills are booking 4th quarter, and one mill has closed its 3rd quarter order books for cold-rolled sheets.

BARS . . . Business is solid on the **West Coast.** Mills expect to be sold out through June shortly. Bars are a 3rd quarter item in **Chicago** with cold finishers having a delivery problem as mill deliveries of hot-rolled bar from the mill continue to stretch out. In **Detroit,** manufacturers are complaining on deliveries. Producers point out that in some cases it's not a question of a customer not having stock in inventory, but rather the problem is getting proper sizes. Carbon bars are into July in the **East** with one producer seeing no letup in solid 3rd quarter demand.

Purchasing Agent's Checklist

SMELTERS: Look for their markets to hold firm . . . . . p. 65

PRESSES: $280 million Air Force program gets underway . . . . . p. 66

AUTOS: American Motors aims at 2-car families . . . . . p. 76

MANGANESE: New deposits take U.S. out of "have not" class . p. 81

MACHINE TOOLS: Top $60 million mark for 4th straight month . p. 87

PLATES . . . **Chicago** reports carryovers are on the increase with deliveries running 2 to 3 weeks behind in some cases despite mill attempts to hold bookings to capacity. Increased railroad buying has leveled, but no big cutback from carbuilders is expected. Second quarter bookings have closed in **Pittsburgh** with a major producer now receiving 3rd quarter orders in greater quantity than he can produce. A step up in pipe line tonnage requirements has helped push order bookings well into July for one eastern producer. In **Detroit,** the market is still extremely tight. One consumer reports his orders have been kicked back almost 4 months.

STRUCTURALS AND SHAPES . . . In the **East,** shapes are in heavy demand and one producer is now talking July delivery. Wide-flange beams lead the parade. In **Pittsburgh,** 3rd quarter orders are filling rapidly and demand is expected to remain strong into 4th quarter. On the **West Coast,** demand is still rising and one mill is reported postponing its annual shutdown for another month.

PIPE AND TUBING . . . In **Pittsburgh,** lap and buttweld are solid for second quarter with July the earliest scheduling date for new business. Seamless continues at a stronger pace. In the **East,** one producer reports he's through second quarter on seamless with buttweld following close behind. A steady construction demand is holding the market firm. Order backlogs are out 2 to 2½ months in **Cleveland,** with most producers accepting new business selectively.

WAREHOUSE . . . Some **Chicago** warehousemen now are willing to admit that a grey market exists. They disagree, however, as to the amount of sales being made at over warehouse prices. They confine grey market activity largely to coil or cut sheet. Warehouses still talk adequate inventory on one hand and yet are crowding mills for delivery on the other. This is mainly in 18-20 gage, however, and off-gage steel has been considerably easier even in cold-rolled sheet. **West Coast** warehousemen report stock is moving almost as fast as it comes from the mills. Customers are after everything they have. **Pittsburgh** reports product demand is uniform right down the line with business running about 40 pct better over last year. In the **East,** increased activity is reported with customers paying more attention to sheets.

Comparison of Prices

(Effective May 3, 1955)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	May 5 1955	Apr. 26 1955	Apr. 5 1955	May 4 1954
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.05¢	4.05¢	4.05¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.95	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.45	5.275
Hot-rolled strip	4.05	4.05	4.05	3.925
Cold-rolled strip	5.79	5.79	5.79	5.613
Plate	4.225	4.225	4.225	4.10
Plates wrought iron	9.30	9.30	9.30	9.30
Stain'l's C-R strip (No. 302)	41.50	41.50	41.50	41.50
Tin and Ternplate: (per base box)				
Tinplate (1.50 lb.) cokes	$9.05	$9.05	$9.05	$8.95
Tinplate, electro (0.50 lb.)	7.75	7.75	7.75	7.65
Special coated mfg. terns	7.85	7.85	7.85	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.30¢	4.30¢	4.30¢	4.16¢
Cold-finished bars	5.40	5.40	5.40	5.20
Alloy bars	5.075	5.075	5.075	4.875
Structural shapes	4.25	4.25	4.25	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.40
Wire: (per pound)				
Bright wire	5.75¢	5.75¢	5.75¢	5.525¢
Rails: (per 100 lb.)				
Heavy rails	$4.45	$4.45	$4.45	$4.325
Light rails	5.35	5.35	5.35	5.20
Semifinished Steel: (per net ton)				
Rerolling billets	$64.00	$64.00	$64.00	$62.00
Slabs, rerolling	64.00	64.00	64.00	62.00
Forging billets	78.00	78.00	78.00	75.50
Alloy blooms, billets, slabs	86.00	86.00	86.00	82.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.675¢	4.675¢	4.675¢	4.525¢
Skelp	3.90	3.90	3.90	3.75
Finished Steel Composite: (per pound)				
Base price	4.797¢	4.797¢	4.797¢	4.634¢

	May 5 1955	Apr. 26 1955	Apr. 5 1955	May 4 1954
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$61.19	$61.19	$61.19	$61.19
Foundry, Valley	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic, del'd Philadelphia	60.27	60.27	60.27	60.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese‡, cents per lb.	9.50¢	9.50¢	9.50¢	10.00¢
‡ 74-76 pct Mn base.				
Pig Iron Composite: (per gross ton)				
Pig iron	$56.59	$56.59	$56.59	$56.59
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$35.50	$35.50	$38.50	$29.50
No. 1 steel, Phila. area	*36.00*	37.00	37.00	22.75
No. 1 steel, Chicago	*33.50*	34.50	35.50	29.50
No. 1 bundles, Detroit	*27.00*	29.00	29.00	22.50
Low phos., Youngstown	*35.50*	36.50	37.50	31.50
No. 1 mach'y cast, Pittsburgh	43.50	43.50	43.50	43.50
No. 1 mach'y cast, Philadel'a	44.50	44.50	44.50	39.50
No. 1 mach'y cast, Chicago	*46.50*	47.00	47.00	41.00
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	*$35.00*	$35.67	$37.00	$27.25
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$13.00	$13.00	$13.05	$14.38
Foundry coke, prompt	16.75	16.75	16.75	16.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	36.00	36.00	35.00	30.00
Copper, Lake, Conn.	36.00	36.00	36.00	30.00
Tin, Straits, New York	*91.125*†	91.375*	91.00	93.50
Zinc, East St. Louis	12.00	12.00	11.75	10.25
Lead, St. Louis	14.80	14.80	14.80	13.80
Aluminum, virgin ingot	23.20	23.20	23.20	21.50
Nickel, electrolytic	67.67	67.67	67.67	65.08
Magnesium, ingot	29.25	29.25	29.25	27.75
Antimony, Laredo, Tex.	28.50	28.50	28.50	28.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

←To identify producers, see Key on P. 167→

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem *B3*	$8.00	$8.50	$9.00	$9.50	.....
Birmingham *R3*	$2.38	$2.88	.....	.....	.....
Birmingham *W9*	$2.38	$2.88	.....	.....	.....
Birmingham *U4*	$2.38	$2.88	$6.50	.....	.....
Buffalo *R3*	$6.00	$6.50	$7.00	.....	.....
Buffalo *I11*	$6.00	$6.50	$7.00	.....	.....
Buffalo *W6*	$6.00	$6.50	$7.00	.....	.....
Chicago *I4*	$6.00	$6.50	$6.50	$7.00	.....
Cleveland *A5*	$6.00	$6.50	$6.50	$7.00	$1.00
Cleveland *R3*	$6.00	$6.50	$6.50	.....	.....
Daingerfield *L3*	$2.50	$2.50	$2.50	.....	.....
Duluth *I4*	$6.00	$6.50	$6.50	$7.00	.....
Erie *I4*	$6.00	$6.50	$6.50	$7.00	.....
Everett *M6*	.....	$1.00	$1.50	.....	.....
Fontana *K1*	$2.00	$2.50	.....	.....	.....
Geneva, Utah *C7*	$6.00	$6.50	.....	.....	.....
Granite City *G2*	$7.90	$8.40	$8.90	.....	.....
Hubbard *V1*	.....	.....	$6.50	.....	.....
Minnequa *C6*	$8.00	$9.00	$9.00	.....	.....
Monessen *P6*	$6.00	.....	.....	.....	.....
Neville Isl. *P4*	$6.00	$6.50	$6.50	.....	.....
N. Tonawanda *T1*	.....	$6.50	$7.00	.....	.....
Pittsburgh *U1*	$6.00	.....	.....	$7.00	.....
Sharpsville *S3*	$6.00	$6.50	$6.50	$7.00	.....
So. Chicago *R3*	$6.00	.....	$6.50	.....	.....
Steelton *B3*	$8.00	$8.50	$9.00	$9.50	$4.00
Swedeland *A2*	$8.00	$8.50	$9.00	$9.50	.....
Toledo *I4*	$6.00	$6.50	$6.50	$7.00	.....
Troy, N. Y. *R3*	$8.00	$8.50	$9.00	$9.50	$4.00
Youngstown *Y1*	.....	.....	$6.50	$7.00	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional, 0.25 pct nickel. Subtract 38¢ per ton for phosphorus content 0.70 and over.

Silvery Iron: Buffalo, *H1*, $66.25; Jackson, *J1, G1*, $65.00. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add $1 per ton for 0.75 pct or more phosphorus. Add 75¢ for each 0.50 pct manganese over 1.0 pct. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	301	302	303	304	316	321	347 Cb	410	416	430
Ingots, rerolling	16.75	17.75	19.25	19.00	29.75	23.50	35.50	14.00	—	14.25
Slabs, billets, rerolling	21.00	23.25	25.25	24.50	38.00	30.25	46.75	18.25	—	18.5
Forg. discs, die blocks, rings	39.00	39.00	42.00	41.25	61.75	46.25	—	31.00	31.75	41.7
Billets, forging	30.00	30.25	32.75	31.75	48.25	36.00	54.75	24.00	24.50	24.5
Bars, wires, structurals	35.75	36.00	38.75	38.00	57.25	42.75	64.25	28.75	29.25	29.2
Plates	37.75	38.00	40.25	40.50	60.50	46.50	69.25	30.00	30.50	30.5
Sheets	41.75	42.00	49.25	44.50	64.50	51.25	77.50	34.25	41.25	34.7
Strip, hot-rolled	30.25	32.50	37.25	35.00	55.00	41.75	63.00	26.25	—	27.0
Strip, cold-rolled	38.75	42.00	46.00	44.50	64.50-64.75	51.25-51.50	77.50	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS:

Sheets Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; McKeesport, Pa., *U1*; Washington, Pa., *W2, J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Ft. Wayne, *J4*; Philadelphia, *D5*.

Strip: Midland, Pa., *C11*; Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa. *W2*; W. Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Canton-Massillon, O., *R3*; Middletown, O., *A7*; Harrison N. J., *D3*; Youngstown, *C7*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (.25¢ per lb higher) *W1* (.25¢ per lb higher); New Bedford, Mass., *R6*.

Bar: Baltimore, *A7*; Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1, F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R3*; Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*; Ft. Wayne, *I4*; Philadelphia, *D5*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*.

Plates: Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*, Philadelphia, *D5*.

Forged discs, die blocks, rings: Pittsburgh, *C11*; Syracuse, *C11*; Ferndalt, Mich., *A3*; Washington, Pa., *J2*.

Forgings billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3* Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*.

Prices Continue to Slide

Decline extends to Eastern market where No. 1 is off $1 . . . Chicago price dips again while Pittsburgh reports lagging activity . . . Composite down.

◆ PRICES were off again in most major scrap markets. The price decline, which had started in Pittsburgh and extended to Chicago, was being shared by major centers in the East and elsewhere.

The Pittsburgh price for No. 1 heavy melting remained unchanged at $35.00 to $36.00 as no new business was reported in the area. Philadelphia, which had held firm for the past several weeks, reported steelmaking grades off $1 on the average.

Cleveland, Youngstown, Detroit and Cincinnati all shared in the downward trend. In Detroit the automotive lists, which came out last week, were down on an average of $2 a ton.

No good reason has been advanced for the widespread price drop. More scrap is being generated, but with steel output soaring, more scrap figures to be consumed. Nevertheless, lagging activity and falling prices were the order of the day.

THE IRON AGE Heavy Melting Steel Scrap Composite dropped 67¢ to $35.00.

Pittsburgh . . . No. 1 heavy melting remains unchanged at $36 with no new business reported. Brokers are looking for new purchases before the week is out. Low phos grades are weaker with average grades selling for $40. A substantial purchase of 4 ft and under was made at $39, while sales of premium grades were reported as high as $42. Railroad scrap was moving at prices slightly lower than previous sales.

Chicago . . . Chicago slipped into the old "$2 off Pittsburgh" relationship last week in a period marked by little mill buying activity and a shortage of orders on steelmaking scrap grades. Electric furnace, blast furnace grades, and even cast, though to a lesser extent, were sharing in the slowdown of the past 3 weeks, and railroad sales in several grades were beginning to slip slightly at the broker buying level. Purchases of industrial heavy melting and industrial bundles, as well as considerably less bidding on new lots of industrial bundles offered by the consumer for a sale, had the effect of further weakening the market.

Philadelphia . . . Price of No. 1 heavy melting has dropped $1 to $36.50 on the topside. A purchase of No. 2 bundles at $29.00 ran counter to the downward trend. Blast furnace grades are holding at present, with some softening reported in railroad specialties. At press time, interest centered on a possible labor tie-up of port facilities which could, if it is a long-term affair, directly affect the domestic market.

New York . . . Prices of steelmaking grades were off $1 on the basis of buying by a major Eastern mill. Foundry and blast furnace prices held firm. Clean cast chemical borings dropped $2. Market showed steady domestic and export activity.

Detroit . . . Automotive lists out last week were down on an average of $2 a ton. High auto production is the reason for the drop in prices. Mill inventory at present rates of production is estimated at anywhere from 60 to 100 days. Both dealers and brokers are wondering how much lower the market will go, but most expect it to stay soft at least through the summer months.

Cleveland . . . Valley prices dropped another $1 last week to $35 based on sale of openhearth and blast furnace grades on low side of previous markets. Small tonnage of premium grade or restricted shipments still going at traditional spread. Heavy dealer pressure being exerted for open hearth sales at $35 with no big takers. Cleveland price off $1.50 on basis of blast furnace sale in area, auto plant bundles going to brokers at $31.50 and sympathy with Valley decline. One area mill with 50¢ extra freight from Cleveland bought blast furnace scrap at $24 delivered. Bundles were a glut on the market due to heavy auto production. One broker has tonnage at $33 and finds he is unable to move it at this level.

Birmingham . . . Electric furnace grades and specialties are showing exceptional strength. Blast furnace grades are barely steady. Birmingham brokers predict that when mills buy this month, blast furnace grades may be priced lower.

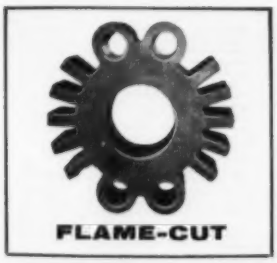
St. Louis . . . The steel rate jumped back 8 points to 106.1 as one mill put two furnaces back into operation after a week shutdown for repairs. No. 1 RR heavy melting and rails random length are off $1 per ton on sales by railroads. Machine shop turnings are off 50¢ per ton to put the differential between that item and borings and turnings at $2, consumers having received sufficient supply of the former. The flow of scrap is steady.

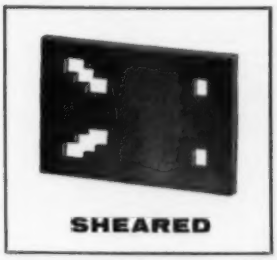
Cincinnati . . . Major nearby mill bought regular monthly tonnage at $1.50 cut from previous market. Another local mill also placed smaller tonnage of railroad scrap at $35.50; No. 1 heavy melting at $34.50; and No. 2 bundles at $25.50, mostly through local brokers. Aside from this, No. 2 bundles and turnings were a glut in the market. Foundries in area showing a little upsurge due to machine tool and implement making activity.

Buffalo . . . Scrap orders placed today in Buffalo by a leading mill were for somewhat lower tonnages than in past months and sent prices of steelmaking grades down $1 to $1.50.

Boston . . . Temporary activity on shoveling turnings has taken this grade out of the nominal price class. Otherwise the picture is substantially unchanged. An eastern Pennsylvania mill is doing some buying. Local mills are out of the market.

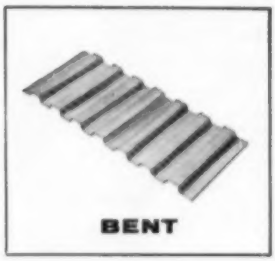
West Coast . . . Prices went up $3 per ton on most grades in the San Francisco area. Mills there are buying against export competition. No change in Los Angeles and Seattle prices.



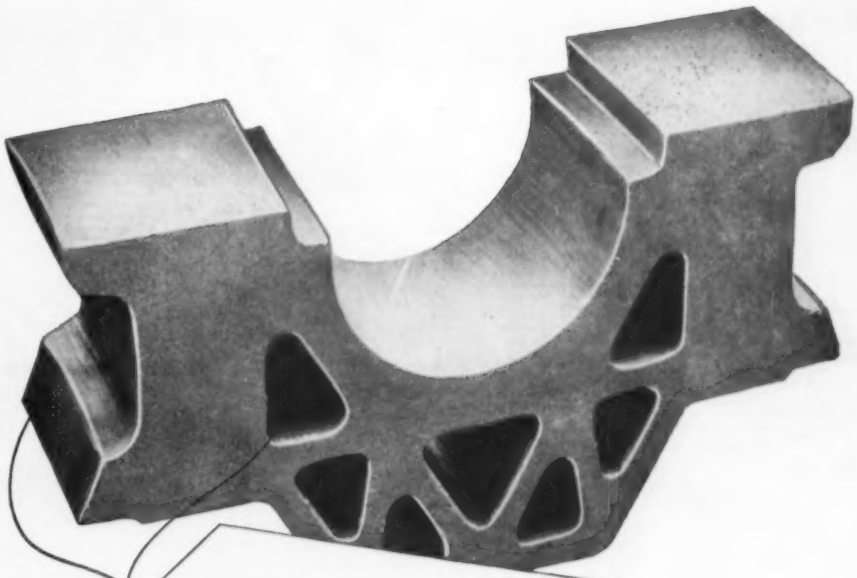








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STEEL PLATE SHAPES SERVICE

BY-PRODUCTS STEEL CO.

A Division of Lukens Steel Company, Coatesville, Pennsylvania

Scrap Prices *(Effective May 8, 1955)*

Pittsburgh

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 bundles	35.00 to 36.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	20.50 to 21.50
Mixed bor. and ms. turns.	20.50 to 21.50
Shoveling turnings	24.50 to 25.50
Cast iron borings	24.50 to 25.50
Low phos. punch'gs, plate	39.00 to 40.00
Heavy turnings	33.00 to 34.00
No. 1 RR. hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	45.00 to 46.00
Rails 2 ft and under	50.00 to 51.00
RR. steel wheels	44.00 to 45.00
RR. spring steel	44.00 to 45.00
RR. couplers and knuckles	44.00 to 45.00
No. 1 machinery cast.	43.00 to 44.00
Cupola cast.	39.00 to 40.00
Heavy breakable cast.	34.00 to 35.00

Chicago

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 factory bundles	35.00 to 36.00
No. 1 dealers' bundles	33.00 to 34.00
No. 2 dealers' bundles	23.00 to 24.00
Machine shop turn.	16.00 to 17.50
Mixed bor. and turn.	18.00 to 19.50
Shoveling turnings	18.00 to 19.50
Cast iron borings	18.00 to 19.50
Low phos. forge crops	40.00 to 41.00
Low phos. punch'gs, plate	37.00 to 38.50
Low phos. 3 ft and under	36.00 to 38.00
No. 1 RR. hvy. melting	38.00 to 39.00
Scrap rails, random lgth.	42.00 to 43.00
Rerolling rails	52.00 to 53.00
Rails 2 ft and under	50.00 to 51.00
Locomotive tires, cut	37.00 to 38.00
Cut boilers & side frames	38.00 to 40.00
Angles and splice bars	44.00 to 45.00
RR. steel car axles	43.00 to 45.00
RR. couplers and knuckles	40.00 to 41.00
No. 1 machinery cast.	46.00 to 47.00
Cupola cast.	41.00 to 42.00
Heavy breakable cast.	32.00 to 33.00
Cast iron brake shoes	33.00 to 34.00
Cast iron car wheels	37.00 to 38.00
Malleable	45.00 to 46.00
Stove plate	36.00 to 37.00

Philadelphia Area

No. 1 hvy. melting	$35.50 to $36.50
No. 2 hvy. melting	32.00 to 33.00
No. 1 bundles	35.50 to 36.50
No. 2 bundles	27.00 to 29.00
Machine shop turn.	21.00 to 22.00
Mixed bor. short turn.	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Shoveling turnings	24.00 to 25.00
Clean cast chem. borings	38.00 to 39.00
Low phos. 5 ft and under	40.00 to 41.00
Low phos. 2 ft and under	41.00 to 42.00
Low phos. punch'gs	41.00 to 42.00
Elec. furnace bundles	39.00 to 40.00
Heavy turnings	34.00 to 35.00
RR. steel wheels	41.00 to 42.00
RR. spring steel	41.00 to 42.00
Rails 18 in. and under	50.00 to 52.00
Cupola cast.	36.00 to 38.00
Heavy breakable cast.	40.00 to 41.00
Cast iron car wheels	44.00 to 45.00
Malleable	44.00 to 45.00
Unstripped motor blocks	37.00 to 38.00
No. 1 machinery cast.	44.00 to 45.00
Charging box cast.	37.00 to 38.00

Cleveland

No. 1 hvy. melting	$31.50 to $32.50
No. 2 hvy. melting	26.00 to 28.00
No. 1 bundles	31.50 to 32.50
No. 2 bundles	25.00 to 27.00
No. 1 busheling	31.50 to 32.50
Machine shop turn.	17.50 to 18.50
Mixed bor. and turn.	22.50 to 23.50
Shoveling turnings	22.50 to 23.50
Cast iron borings	22.50 to 23.50
Cut struct'r'l & plates, 2 ft & under	40.00 to 41.00
Drop forge flashings	31.50 to 32.50
Low phos. punch'gs, plate	32.50 to 33.50
Foundry steel, 2 ft & under	39.50 to 40.50
No. 1 RR. heavy melting	35.00 to 36.00
Rails 2 ft and under	48.00 to 49.00
Rails 18 in. and under	49.00 to 50.00
Railroad grate bars	26.00 to 27.00
Steel axle turnings	26.00 to 27.00
Railroad cast.	44.00 to 45.00
No. 1 machinery cast.	44.00 to 45.00
Stove plate	43.00 to 44.00
Malleable	44.00 to 45.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 bundles	34.00 to 35.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. plate	35.00 to 36.00

Buffalo

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 busheling	30.00 to 31.00
No. 1 bundles	30.00 to 31.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	20.50 to 21.50
Shoveling turnings	21.50 to 22.50
Cast iron borings	20.50 to 21.50
Low phos. plate	34.00 to 35.00
Scrap rails, random lgth.	35.00 to 36.00
Rails 2 ft and under	42.00 to 43.00
RR. steel wheels	36.00 to 37.00
RR. spring steel	36.00 to 37.00
RR. couplers and knuckles	36.00 to 37.00
No. 1 machinery cast.	40.00 to 41.00
No. 1 cupola cast.	36.00 to 37.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$26.50 to $27.50
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles, openhearth	26.50 to 27.50
No. 2 bundles	18.00 to 19.00
New busheling	26.50 to 27.50
Drop forge flashings	26.50 to 27.50
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	14.50 to 15.50
Shoveling turnings	15.50 to 16.50
Cast iron borings	15.50 to 16.50
Low phos. punch'gs, plate	27.50 to 28.50
No. 1 cupola cast.	35.00 to 37.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	31.00 to 32.00
Automotive cast.	40.00 to 41.00

St. Louis

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 bundles	31.00 to 32.00
No. 2 bundles	24.50 to 25.50
Machine shop turn.	15.50 to 16.50
Cast iron borings	17.50 to 18.50
Shoveling turnings	17.50 to 18.50
No. 1 RR. hvy. melting	36.00 to 37.00
Rails, random lengths	40.00 to 41.00
Rails, 18 in. and under	48.00 to 49.00
Locomotive, tires uncut	36.50 to 37.50
Angles and splice bars	36.50 to 37.50
Std. steel car axles	36.00 to 37.00
RR. spring steel	37.00 to 38.00
Cupola cast.	42.00 to 43.00
Hvy. breakable cast.	34.00 to 35.00
Cast iron brake shoes	32.00 to 33.00
Stove plate	35.00 to 36.00
Cast iron car wheels	36.00 to 37.00
Malleable	36.00 to 37.00
Unstripped motor blocks	33.50 to 34.50

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	18.00 to 19.00
No. 1 busheling	26.00 to 27.00
Elec. furnace, 3 ft & under	31.00 to 32.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and short turn.	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
Clean cast chem. borings	15.00 to 16.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	29.00 to 30.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	27.00 to 28.00
Unstripped motor blocks	17.00 to 18.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$31.50
No. 2 hvy. melting	27.50
No. 2 bundles	$23.00 to 24.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Clean cast chem. borings	20.00 to 21.00
No. 1 machinery cast.	37.00 to 39.00
Mixed yard cast.	31.00 to 32.00
Charging box cast.	31.00 to 32.00
Heavy breakable cast.	31.00 to 32.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 bundles	31.00 to 32.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	32.00 to 33.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	19.00 to 20.00
Electric furnace bundles	32.00 to 33.00
Bar crops and plate	36.00 to 37.00
Structural and plate, 2 ft.	36.00 to 37.00
No. 1 RR. hvy. melting	36.00 to 37.00
Scrap rails, random lgth.	42.00 to 43.00
Rails, 18 in. and under	45.00 to 46.00
Angles & splice bars	43.00 to 44.00
Rerolling rails	43.00 to 44.00
No. 1 cupola cast.	45.00 to 46.00
Stove plate	42.00 to 43.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	35.50 to 36.50
Mashed tin cans	15.00 to 16.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$31.50 to $32.50
No. 2 hvy. melting	28.50 to 29.50
No. 1 bundles	31.50 to 32.50
No. 2 bundles	22.50 to 23.50
Machine shop turn.	16.50 to 17.50
Mixed bor. and turn.	17.50 to 18.50
Shoveling turnings	19.50 to 20.50
Cast iron borings	17.50 to 18.50
Low phos., 18 in. & under	37.00 to 38.00
Rails, random lengths	41.00 to 42.00
Rails, 18 in. and under	47.00 to 48.00
No. 1 cupola cast.	40.00 to 41.00
Hvy. breakable cast.	34.00 to 35.00
Drop broken cast.	44.00 to 45.00

San Francisco

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 1 bundles	29.00
No. 2 bundles	25.00
No. 3 bundles	21.00
Machine shop turn.	10.00
Cast iron borings	9.00
No. 1 RR. hvy. melting	30.00
No. 1 cupola cast.	40.00

Los Angeles

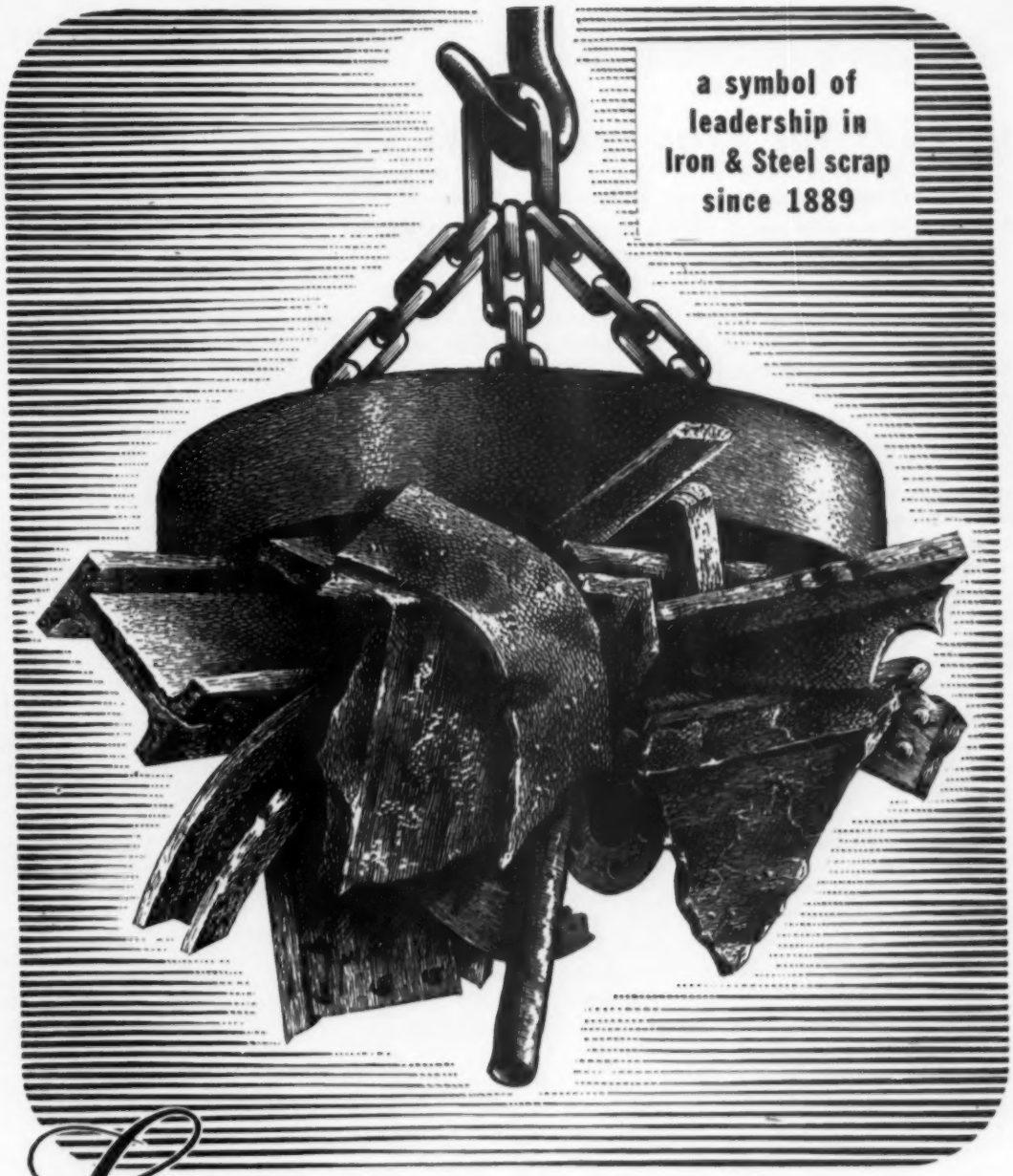
No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 1 bundles	29.00
No. 2 bundles	23.00
No. 3 bundles	20.00
Machine shop turn.	8.00
Shoveling turnings	10.00
Cast iron borings	10.00
Elec. furn. 1 ft. and under	30.00
No. 1 RR. hvy. melting	30.00
No. 1 cupola cast.	$41.00 to 42.00

Seattle

No. 1 hvy. melting	$33.00
No. 2 hvy. melting	29.00
No. 2 bundles	23.00
No. 3 bundles	19.00
No. 1 cupola cast.	35.00
Mixed yard cast.	35.00

Hamilton, Ont.

No. 1 hvy. melting	$34.00
No. 2 hvy. melting	31.00
No. 1 bundles	34.00
No. 2 bundles	28.00
Mixed steel scrap	28.00
Bushelings	29.00
Bush., new fact prep'd	32.00
Bush., new fact unprep'd	28.00
Short steel turnings	$16.00 to 17.00
Mixed bor. and turn.	16.00 to 17.00
Rails, rerolling	43.00
Cast scrap	42.00 to 45.00



Luria Brothers and Company, Inc.

MAIN OFFICE

LINCOLN-LIBERTY BLDG.

Philadelphia 7, Penna.

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READING, PENNA.
MODENA, PENNA.
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PITTSBURGH, PENNA.
ERIE, PENNA.

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Big Year for Zinc Producers

See diecasters using record amounts of zinc; galvanizing and brass mill use also up . . . Brass, bronze ingot prices decline . . . Titanium production registers first quarter gain.

◆ IT WILL be an extremely good year for zinc producers. That's the essence of the many optimistic forecasts that were made at the annual meeting of the American Zinc Institute in Chicago last week.

Specifically: diecasters will use a record amount of the metal this year, demand for galvanized sheets is expected to strain that industry's capacity and brass mills are expected to step up their zinc consumption.

At an earlier joint meeting of the American Zinc Institute and the Lead Industries Assn., Simon Strauss, vice-president, American Smelting & Refining Co., said the current balance of zinc and lead supply and demand is a result of the price levels that have been in effect for the last 9 months. He warned that if prices went up—particularly on zinc—mine consumption would rise, consumption would dip, and producers stocks would start going up again.

COPPER . . . Government, still trying to ease the tight copper supply situation, has placed restrictions on exports of refined copper produced from Canadian scrap. Dept. of Commerce extended second quarter copper scrap export licensing restrictions to include Canadian origin copper scrap and copper-base alloy scrap, formerly under open-end licensing.

Bureau of Foreign Commerce which administers the export restrictions said the new limitation was imposed to prevent a drain through the U. S. of Canadian copper scrap needed in this hemisphere. The action complements recent move by the Canadian government in restricting scrap exports to all destinations except the U. S.

Early last week, leading manufacturers of brass and bronze ingots made an across the board price cut ranging from 1½¢ to 2¢ per lb in the 85-5-5-5 and yellow ingot groups.

ALUMINUM . . . There were some signs of possible softening of the secondary aluminum shortage. Though prices were generally firm, there was a slight downward movement. Aluminum scrap is also in somewhat easier supply.

Reynolds Metals Co. is planning to build a $3 million aluminum extrusion plant near Richmond, Va. Output is slated for the architectural, construction and transportation industries. The extrusion plant is expected to be in production at the start of next year.

And Alcoa last week announced installation of new 72-in., four-high foil mills at its Alcoa, Tenn., plant.

TITANIUM . . . Growth of the titanium industry is indicated in government figures covering titanium mill production, though there are many, including government officials who feel the industry is not developing as fast as it should. Total first quarter production amounted to 777,323 lb, up 28,653 lb from fourth quarter 1954.

Making up the first quarter production total were 460,364 lb of sheet, plate and strip; 221,124 lb of forging and extrusion billets, and 115,731 lb of rod, bar and wire. Included in the sheet, plate and strip total was a small quantity of titanium for tubing.

If production continues at its current pace throughout the year, output will total a record 3.1 million lb, compared with 2.6 million lb last year and 2.2 million lb in 1953.

MAGNESIUM . . . Production of magnesium ingots and shipments of wrought magnesium products picked up in March according to latest Magnesium Assn. statistics. Primary output totaled 4942 tons in March compared with 4646 tons in the shorter month of February. Shipments of wrought magnesium products in March hit 973 tons compared with 824 tons in February.

For the quarter: ingot production amounted to 14,677 tons down 22 pct from the 18,847 tons turned out in same period '54. Shipments, however, are running 62 pct ahead of the first quarter '54 pace, totaling 2685 tons in first quarter this year compared with 1660 in the first 3 months of 1954.

TIN . . . Senate last week passed and sent to the House a resolution continuing operation of the Texas City tin smelter by the government until June 30, 1956, or as long after that date as Congress may deem advisable. Some opposition to the proposal is expected in the House, but general view is that the resolution will be approved because of the strong political backing it has received.

Daily Nonferrous Metal Prices

(Cents per lb except as noted)

	Apr. 27	Apr. 28	Apr. 29	Apr. 30	May 2	May 3
Copper, electro, Conn.	36.00	36.00	36.00	36.00	36.00	36.00
Copper, Lake, delivered	36.00	36.00	36.00	36.00	36.00	36.00
Tin, Straits, New York	91.375	91.125	91.25		91.125	91.125*
Zinc, East St. Louis	12.00	12.00	12.00	12.00	12.00	12.00
Lead, St. Louis	14.80	14.80	12.00	14.80	14.80	14.80

Note: Quotations are going prices **Tentative*

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in April based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, Del'd Conn. Valley	36.00	Zinc, E. St. Louis	11.93
Lake copper, delivered	36.00	Zinc, New York	12.43
Straits tin, New York	91.40	Lead, St. Louis	14.80
		Lead, New York	15.00

Nonferrous Prices *(Effective May 3, 1955)*

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Alloy	Flat Sheet			Plate
	0.032 in.	0.081 in.	0.136-0.249 in.	0.250-3.000 in.
1100, 3003	39.1	37.1	35.9	35.5
3004	44.0	39.8	38.1	37.6
5052	46.7	41.9	40.2	39.3
2024-O, -OAL	49.4	40.8	39.3	39.4
7075-O, -OAL	60.8	49.1	46.8	46.8

Extruded Solid Shapes: Shape factors 1 to 8, 88.7¢ to 86.7¢; 12 to 14, 39.4¢ to $1.04; 24 to 26, 42.2¢ to $1.36; 36 to 38, 49.8¢ to $1.97.

Rod, Round: Rolled, 1.064-4-5 in. 1100-F, 48.6¢ to 40.1¢; cold finished, 0.375-3.499 in., 1100-F, 47.9¢ to 42.4¢.

Screw Machine Stock: Rounds, 2011-T3, ¼-11/32 in., 63.5¢ to 50.1¢; 9/16-1½ in., 49.9¢ to 46.9¢; 1 9/16-3 in., 45.7¢ to 42.7¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051-0.374 in., 1100, 47.1¢ to 35.8¢; 5052, 56.7¢ to 44.4¢; 2017-T4, 64.3¢ to 44.7¢; 6061-T4, 59.5¢ to 44.1¢.

Extruded Tubing: Rounds, 6063-T5, OD 1¼-2 in., 44.4¢ to 64.8¢; 2-4 in., 40.3¢ to 54.6¢; 4-6 in., 40.8¢ to 49.8¢; 6-9 in., 41.4¢ to 52.1¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42⅝ x 60-in., $2.998; x 96-in., $4.801; x 120-in., $6.002; x 144-in., $7.202. Coiled sheet, per lb, 0.019 in. x 28 in., 30.9¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FS1-O ¼ in., 59¢; 3/16 in., 60¢; ½ in., 59¢; 0.064 in., 76¢; 0.032 in., 97¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 79¢; ½ to ⅝ in., 62.5¢; 1¼ to 1.749 in., 59¢; 2½ to 5 in., 54.5¢. Other alloys higher. Base up to ⅝ in. diam, 10,000 lb; ⅝ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 67.3¢; 0.22 to 0.25 lb, 5.9 in., 64.3¢; 0.50 to 0.59 lb, 8.6 in., 61.7¢; 1.8 to 2.59 lb, 19.5 in., 59.8¢; 4 to 6 lb, 28 in., 55¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD ¾ to 5/16 in., $1.46; 5/16 to ⅜ in., $1.32; ½ to ⅝ in., 99¢; 1 to 2 in., 82¢; 0.165 to 0.219 in. wall: OD, ⅝ to ¾ in., 67¢; 1 to 2 in., 63¢; 3 to 4 in., 62¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $9; Forgings, $9.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	102	78	99
Strip, CR	102	87	126
Rod, Bar, HR	87	69	93
Angles, HR	87	69	93
Plate, HR	97	82	95
Seamless Tube	122	108	153
Shot, Blocks		85	

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	52.79		54.86
Copper, h-r	54.76	51.11	
Copper, drawn		52.36	
Low brass	49.75	49.69	
Yellow brass	46.27	46.21	
Red brass	50.99	50.93	
Naval brass		44.30	45.56
Leaded brass			43.09
Com. bronze	52.78	52.72	
Mang. bronze	53.73	47.83	49.39
Phos. bronze	73.03	73.53	
Muntz metal	48.14	43.95	45.20
Ni silver, 10 pct	60.20	63.28	66.34

Beryllium copper, CR, 1.9% Be, Base 2000 lb, f.o.b.

Strip	$1.74
Rod, bar, wire	1.71

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	23.20
Aluminum pig	21.50
Antimony, American, Laredo, Tex.	28.50
Beryllium copper, per lb conta'd Be	$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	$72.25
Bismuth, ton lots	$2.25
Cadmium, del'd	$1.70
Cobalt, 97-99% (per lb)	$2.60 to $2.67
Copper, electro, Conn. Valley	36.00
Copper, Lake, delivered	36.00
Gold, U. S. Treas., per troy oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$90 to $100
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig	28.50
ingot	29.25
Magnesium, sticks, 100 to 500 lb	49.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$315 to $318
Nickel electro, f.o.b. N. Y. warehouse	67.67
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel	60.75
Palladium, dollars per troy oz.	$18 to $20
Platinum, dollars per troy oz.	$76 to $79
Silver, New York, cents per troy oz.	87.00
Tin, New York	91.125
Titanium, sponge, grade A-1	$3.95
Zinc, East St. Louis	12.00
Zinc, New York	12.50
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	35.50
No. 120	35.00
No. 123	34.50
80-10-10 ingot	
No. 305	39.00
No. 315	37.25
88-10-2 ingot	
No. 210	48.75
No. 215	45.25
No. 245	40.75
Yellow ingot	
No. 405	30.75
Manganese bronze	
No. 421	33.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	30.00-30.50
0.60 copper, max.	29.75-30.25
Piston alloys (No. 122 type)	28.50-30.00
No. 12 alum. (No. 2 grade)	27.75-28.00
108 alloy	28.50-29.00
195 alloy	29.50-30.25
13 alloy (0.60 copper max.)	29.75-30.25
ASX-679	28.50-29.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	28.50-29.00
Grade 2—92-95%	27.50-28.50
Grade 3—90-92%	27.00-28.00
Grade 4—85-90%	26.50-27.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	44.92
Electrodeposited	39.78
Flat rolled	45.42
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	90.50*
Cadmium	$1.70
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.	94½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63.00
Copper sulphate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	31.25*
Nickel chloride, 300 to 400 lb	43.50*
Silver cyanide, 100 oz. lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

*Effective Jan. 3.

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	32	31¼
Yellow brass	23⅞	22
Red brass	28½	27⅝
Comm. bronze	29¼	28½
Mang. bronze	22 1/6	21⅝
Yellow brass rod ends	23⅝	22

Custom Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	33½
No. 2 copper wire	32
Light copper	30¼
*Refinery brass	30

* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	33
No. 2 copper wire	31½
Light copper	29¼
No. 1 composition	27 —28
No. 1 comp. turnings	26½—27
Rolled brass	21 —22
Brass pipe	20½—21
Radiators	21 —22
Aluminum	
Mixed old cast	17 —18
Mixed new clips	18 —19½
Mixed turnings, dry	17½—18

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire	30 —31½
No. 2 heavy copper and wire	29 —29½
Light copper	27 —27½
New type shell cuttings	26½—27
Auto radiators (unsweated)	19
No. 1 composition	25 —25½
No. 1 composition turnings	24 —24½
Unlined red car boxes	18½—19
Cocks and faucets	19 —19½
Mixed heavy yellow brass	16½—17
Old rolled brass	18 —18¼
Brass pipe	19 —19½
New soft brass clippings	21
Brass rod ends	19
No. 1 brass rod turnings	18½
Aluminum	
Alum. pistons and struts	14 —14½
Aluminum crankcases	15½—16
1100 (2S) aluminum clippings	17 —18
Old sheet and utensils	14 —14½
Borings and turnings	9½—10
Misc. cast aluminum	14 —14½
2024 (24s) clippings	15½—16
Zinc	
New zinc clippings	7½
Old zinc	5½
Zinc routings	3½— 3¾
Old die cast scrap	3⅛— 3⅜
Nickel and Monel	
Pure nickel clippings	57
Clean nickel turnings	40
Nickel anodes	57
Nickel rod ends	57
New Monel clippings	28
Clean Monel turnings	21
Old sheet Monel	26
Nickel silver clippings, mixed	16½
Nickel silver turnings, mixed	13½
Lead	
Soft scrap lead	11½—11
Battery plates (dry)	6½— 6
Batteries, acid free	4
Magnesium	
Segregated solids	18½—19
Castings	17½—18
Miscellaneous	
Block tin	75
No. 1 pewter	50 —55
No. 1 auto babbitt	45
Mixed common babbitt	12 —12½
Solder joints	17 —17½
Siphon tops	40
Small foundry type	16½
Monotype	15
Lino. and stereotype	13½—14
Electrotype	12 —12½
Hand picked type shells	9½
Lino. and stereo. dross	6½
Electro dross	5

IRON AGE

STEEL PRICES

(Effective May 8, 1956)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$86.00 *B3*		4.30 *B3*	6.45 *B3*	4.30 *B3*						
	Buffalo, N. Y.	$64.00 *B3*	$78.00 *B3, R3*	$86.00 *B3, R3*	5.075 *B3*	4.30 *B3*	6.45 *B3*	4.30 *B3*	4.05 *B3,R3*	5.75 *R7, S10*	6.15 *B3*	8.425 *B3*		
	Claymont, Del.													
	Harrison, N. J.													12.45 *C11*
	Conshohocken, Pa.								4.10 *A2*	5.80 *A2*	6.15 *A2*			
	New Bedford, Mass.									6.20 *R6*				
	Johnstown, Pa.	$64.00 *B3*	$78.00 *B3*	$86.00 *B3*		4.30 *B3*	6.45 *B3*		4.05 *B3*					
	Fairless, Pa.													
	New Haven, Conn.									6.20 *D1* 6.50 *A5*				
	Phoenixville, Pa.					4.20 *P2*		4.30 *P2*						
	Sparrows Pt., Md.								4.05 *B3*	5.75 *B3*	6.15 *B3*	8.425 *B3*		
	Bridgeport, Wallingford, Conn.	$60.00 *N8*	$83.00 *N8*						4.35 *N8*	6.20 *W1*			7.80 *N8*	
	Pawtucket, R. I. Worcester, Mass.									6.30 *N7* 6.60 *A5*				12.75 *A5* 12.80 *N7*
MIDDLE WEST	Alton, Ill.								4.225 *L1*					
	Ashland, Ky.								4.05 *A7*					
	Canton-Massillon, Dover, Ohio		$80.00 *R3*	$86.00 *R3, T3*										12.45 *G4*
	Chicago, Ill.	$64.00 *U1*	$78.00 *R3, U1,W8*	$86.00 *U1, W8,R3*	5.075 *U1*	4.25 *U1, W8*	6.40 *U1, Y1*	4.25 *U1*	4.05 *A1,N4 W8*	5.85 *A1*				
	Cleveland, Ohio									5.75 *A5,J3*		8.60 *A5*		12.45 *A5*
	Detroit, Mich.			$86.00 *R5*					4.15 *G3,M2*	5.85 *D1,D2, G3,M2,P11*	6.25 *G3*	8.70 *D2, G3*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$64.00 *U1*	$78.00 *U1*	$86.00 *U1, Y1*	5.075 *I3*	4.25 *I3, U1*	6.40 *U1, I3*		4.05 *I3, U1,Y1*	5.85 *I3*	6.15 *U1, I3,Y1*	8.60 *Y1*	6.70 *U1, Y1*	
	Sterling, Ill.								4.15 *N4*					
	Indianapolis, Ind.									5.90 *C5*				
	Newport, Ky.												6.70 *Y5*	
	Middletown, Ohio									5.75 *A7*				
	Niles, Warren, Ohio Sharon, Pa.								4.05 *S1,R3*	5.75 *S1,R3, T4*	6.15 *S1, R3*	8.60 *S1, R3*	6.70 *S1*	12.45 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	$64.00 *U1, J3*	$78.00 *J3, U1,C11*	$86.00 *U1, C11*	5.075 *U1*	4.25 *J3, U1*	6.40 *J3, U1*	4.25 *U1*	4.05 *P6*	5.75 *B4,J3, S7*			6.70 *S9*	12.45 *S9*
	Portsmouth, Ohio								4.05 *P7*	5.75 *P7*				
	Weirton, Wheeling, Follansbee, W. Va.					4.25 *W3*			4.05 *W3*	5.75 *F3,W3*	6.15 *W3*	8.60 *W3*		
	Youngstown, Ohio		$78.00 *C10*	$86.00 *Y1, C10*		4.25 *Y1*	6.40 *Y1*		4.05 *U1,Y1*	5.75 *Y1,C5*	6.15 *U1, Y1*	8.60 *Y1*	6.70 *U1, Y1*	12.45 *C5*
WEST	Fontana, Cal.	$72.00 *K1*	$86.00 *K1*	$105.00 *K1*		4.90 *K1*	7.05 *K1*	5.25 *K1*	4.825 *K1*	7.50 *K1*	7.25 *K1*		8.10 *K1*	14.55 *K1*
	Geneva, Utah		$78.00 *C7*			4.25 *C7*	6.40 *C7*							
	Kansas City, Mo.					4.30 *S2*	6.45 *S2*				6.40 *S2*		6.95 *S2*	
	Los Angeles, Torrance, Cal.		$87.50 *B2*	$106.00 *B2*		4.95 *B2, C7*	7.10 *B2*		4.80 *B2,C7*	7.80 *C1*				
	Minnequa, Colo.					4.70 *C6*			5.15 *C6*					
	Portland, Ore.					5.00 *O2*								
	San Francisco, Niles, Pittsburgh, Cal.		$87.50 *B2*			4.90 *B2* 4.95 *P9*	7.05 *B2*		4.80 *B2,C7*					
	Seattle, Wash.		$91.50 *B2*			5.00 *B2*	7.15 *B2*		5.05 *B2, P12*					
SOUTH	Atlanta, Ga.								4.25 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$64.00 *T2*	$78.00 *T2*			4.25 *C16, R3,T2*	6.40 *T2*		4.05 *R3, T2C16*		6.15 *T2*			
	Houston, Tex.		$83.00 *S2*	$91.00 *S2*		4.30 *S2*	6.45 *S2*				6.40 *S2*		6.95 *S2*	

IRON AGE

STEEL PRICES

(Effective May 5, 1955)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized *10* ga.	Enameling *12* ga.	Long Terne *10* ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled *19* ga.		Cokes* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Hollowware Enameling *29* ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.05 *B3*	4.95 *B3*				6.10 *B3*	7.50 *B3*			4.675 *W6*	† Special coated mfg. terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate $5 to 128 lb. deduct $2.20 from 1.25-lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.10. Differential 1.00 lb./0.25 lb. add 85¢.		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.	4.10 *A2*	5.00 *A2*				6.15 *A2*							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.										4.675 *B3*			
	Fairless, Pa.	4.10 *U1*	5.00 *U1*				6.15 *U1*	7.55 *U1*				$8.90 *U1*	$7.60 *U1*	
	New Haven, Conn.													
	Phoenixville, Pa.													
	Sparrows Pt., Md.	4.05 *B3*	4.95 *B3*	5.45 *B3*			6.10 *B3*	7.50 *B3*	8.20 *B3*		4.775 *B3*	$8.90 *B3*	$7.60 *B3*	
	Worcester, Mass.										4.975 *A5*			
	Trenton, N. J.													
MIDDLE WEST	Alton, Ill.										4.85 *L1*			
	Ashland, Ky.	4.05 *A7*		5.45 *A7*	5.375 *A7*									
	Canton-Massillon, Dover, Ohio			5.45 *R1, R3*						5.175 *R1*				
	Chicago, Joliet, Ill.	4.05 *A1, W8*					6.10 *U1*				4.675 *A5, N4, R3*			
	Sterling, Ill.										4.775 *N4*			
	Cleveland, Ohio	4.05 *J3, R3*	4.95 *J3, R3*		5.375 *R3*		6.10 *J3, R3*	7.50 *J3, R3*			4.675 *A5*			
	Detroit, Mich.	4.15 *G3, M2*	5.05 *G3*				6.20 *G3*	7.60 *G3*						
	Newport, Ky.	4.05 *N3*	4.95 *N5*	5.45 *N5*										
	Gary, Ind. Harbor, Indiana	4.05 *I3, U1, Y1*	4.95 *I3, U1, Y1*	5.45 *U1, I3*	5.375 *I3, U1*	5.85 *U1*	6.10 *U1, I3, Y1*	7.50 *U1, Y1*			4.675 *Y1*	$8.80 *I3, U1, Y1*	$7.50 *I3, U1, Y1*	6.20 *U1, Y1*
	Granite City, Ill.	4.25 *G2*	5.15 *G2*	5.65 *G2*	5.575 *G2*								$7.60 *G2*	6.30 *G2*
	Kokomo, Ind.	4.15 *C9*		5.55 *C9*						5.30 *C9*	4.775 *C9*			
	Mansfield, Ohio					5.85 *E2*				5.175 *E2*				
	Middletown, Ohio		4.95 *A7*		5.375 *A7*	5.85 *A7*								
	Niles, Warren, Ohio Sharon, Pa.	4.05 *S1, R3* 5.30 *N3*	4.95 *R3* 5.975 *N3*	5.45 *N3, R3*	6.725 *N3*	5.85 *N3*	6.10 *S1, R3*	7.50 *R3*				$8.80 *R3*	$7.50 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.05 *J3, U1, P6*	4.95 *J3, U1, P6*	5.45 *U1*	5.375 *U1*		6.10 *J3, U1*	7.50 *J3, U1*	8.20 *U1*		4.675 *A5* 4.875 *P6*	$8.80 *J3, U1*	$7.50 *J3, U1*	6.20 *U1*
	Portsmouth, Ohio	4.05 *P7*	4.95 *P7*								4.675 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.05 *W3, W5*	4.95 *W3, W5, F3*	5.45 *W3, W5*		5.85 *W3, W5*	6.10 *W3*	7.50 *W3*				$8.80 *W3, W5*	$7.50 *W3, W5*	6.20 *F3, W5*
	Youngstown, Ohio	4.05 *U1, Y1*	4.95 *Y1*		5.375 *Y1*		6.10 *U1, Y1*	7.50 *Y1*			4.675 *Y1*			
WEST	Fontana, Cal.	4.825 *K1*	6.05 *K1*				6.875 *K1*	8.55 *K1*			5.475 *K1*			
	Geneva, Utah	4.15 *C7*												
	Kansas City, Mo.										4.925 *S2*			
	Los Angeles, Torrance, Cal.										5.475 *C7, B2*			
	Minnequa, Colo.										4.925 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	4.75 *C7*	5.90 *C7*	6.20 *C7*							5.325 *C7*	$9.55 *C7*	$8.25 *C7*	
	Seattle, Wash.													
SOUTH	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	4.05 *R3, T2*	4.95 *T2*	5.45 *R3, T2*			6.10 *T2*			5.35 *R3*	4.675 *T2, R3*	$8.80 *T2*	$7.60 *T2*	
	Houston, Tex.										4.925 *S2*			

STEEL PRICES

(Effective May 8, 1955)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				5.075 *B3*	6.625 *B3*	6.45 *B3*					
	Buffalo, N. Y.	4.30 *B3,R3*	4.30 *B3,R3*	5.45 *B5*	5.075 *B3,R3*	6.625 *B3,B5*	6.45 *B3*	4.225 *B3,R3*			6.45 *B3*	5.75 *W6*
	Claymont, Del.							4.225 *C4*		5.80 *C4*		
	Contoyville, Pa.							4.225 *L4*		5.80 *L4*	6.45 *L4*	
	Conshohocken, Pa.							4.225 *A2*	5.275 *A2*		6.45 *A2*	
	Harrisburg, Pa.							4.225 *C3*	5.275 *C3*			
	Hartford, Conn.			5.90 *R3*		6.925 *R3*						
	Johnstown, Pa.	4.30 *B3*	4.30 *B3*		5.075 *B3*		6.45 *B3*	4.225 *B3*		5.80 *B3*	6.45 *B3*	5.75 *B3*
	Fairless, Pa.	4.45 *U1*	4.45 *U1*		5.225 *U1*							
	Newark, N. J.			5.85 *W10*		6.90 *W10*						
	Camden, N. J.			5.85 *P10*								
	Bridgeport, Putnam, Conn.	4.55 *N8*		5.95 *W10*	5.225 *N8*			4.475 *N8*				
	Sparrows Pt., Md.		4.30 *B3*					4.225 *B3*		5.80 *B3*	6.45 *B3*	5.85 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			5.85 *W11* 5.95 *B5,C14*		6.925 *A5,B5*						6.05 *A5, W6*
MIDDLE WEST	Alton, Ill.	4.50 *L1*										5.925 *L1*
	Ashland, Newport, Ky.							4.225 *A7,N5*		5.80 *N5*		
	Canton-Massillon, Mansfield, Ohio	4.40 *R3*		5.40 *R2,R3*	5.075 *R3,T5*	6.625 *R2,R3, T5*		4.225 *E2*				
	Chicago, Joliet, Ill.	4.30 *U1, N4,W8,R3, P15*	4.30 *N4,R3, P15*	5.40 *A5,W10, W8,B5,L2*	5.075 *U1,R3, W8*	6.625 *A5,W8, W10,L2,B5*		4.225 *U1,W8, I3,A1,R3*	5.275 *U1*	5.80 *U1*	6.45 *U1*	5.75 *A5, R3,N4,W7*
	Cleveland, Ohio	4.30 *R3*	4.30 *R3*	5.40 *A5,C13*		6.625 *A5,C13*	6.45 *R3*	4.225 *J3,R3*	5.275 *J3*		6.45 *J3,R3*	5.75 *A5, C13*
	Detroit, Mich.	4.40 *G3* 4.45 *R5*		5.40 *R5* 5.80 *B5,P8* 5.85 *P5*	5.075 *R5* 5.175 *G3*	6.625 *R5* 6.825 *B5,P3 P8*	6.55 *G3*	4.325 *G3*			6.55 *G3*	
	Duluth, Minn.											5.75 *A5*
	Gary, Ind. Harbor, Crawfordsville	4.30 *I3, U1, Y1*	4.30 *I3, U1, Y1*	5.40 *M5,R3*	5.075 *I3, U1, Y1*	6.625 *M5, R3*	6.45 *U1,I3, Y1*	4.225 *I3, U1,Y1*	5.275 *I3*	5.80 *U1,Y1*	6.45 *U1,I3, Y1*	5.85 *M4*
	Granite City, Ill.							4.425 *G2*				
	Kokomo, Ind.											5.85 *C9*
	Sterling, Ill.	4.40 *N4*	4.40 *N4*									5.85 *N4*
	Niles, Ohio Sharon, Pa.	4.30 *R3*					6.45 *R3*	4.225 *S1,R3*		5.80 *S1*	6.45 *S1*	
	Pittsburgh, Pa. Midland, Pa.	4.30 *J3, U1, C11*	4.30 *J3, U1*	5.40 *A5,C8, C11,J3, W10,B4,R3*	5.075 *U1,C11*	6.625 *A5,C11, W10,C8,R3*	6.45 *J3, U1*	4.225 *J3, U1*	5.275 *U1*	5.80 *U1*	6.45 *J3, U1*	5.75 *A5,J3, P6*
	Portsmouth, Ohio											5.75 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.30 *W3*						4.225 *W3, W5*				
	Youngstown, Ohio	4.30 *U1,Y1, C10,R3*	4.30 *U1,Y1, R3*	5.40 *F2,Y1, C10*	5.075 *U1,Y1, C10*	6.625 *Y1,C10* 6.665 *F2*	6.45 *U1,Y1*	4.225 *U1,Y1, R3*		5.80 *Y1*	6.45 *Y1*	5.75 *Y1*
WEST	Emeryville, Cal.	5.05 *J5*	5.05 *J5*									
	Fontana, Cal.	5.00 *K1*	5.00 *K1*		6.125 *K1*		7.70 *K1*	4.875 *K1*		6.45 *K1*	7.15 *K1*	
	Geneva, Utah							4.225 *C7*			6.45 *C7*	
	Kansas City, Mo.	4.55 *S2*	4.55 *S2*		5.325 *S2*		6.70 *S2*					6.00 *S2*
	Los Angeles, Torrance, Cal.	5.00 *B2,C7*	5.00 *B2,C7*	6.85 *R3*	6.125 *B2*		7.15 *B2*					6.70 *B2*
	Minnequa, Colo.	4.75 *C6*	4.75 *C6*					5.075 *C6*				6.00 *C6*
	Portland, Ore.	5.05 *O2*	5.05 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	5.00 *C7,P9* 5.05 *B2*	5.00 *C7,P9* 5.05 *B2*				7.20 *B2*					6.70 *C7*
	Seattle, Wash.	5.05 *B2,P13, N6*	5.05 *B2,P13*				7.20 *B2*	5.125 *B2*		6.70 *B2*	7.35 *B2*	
SOUTH	Atlanta, Ga.	4.50 *A8*	4.50 *A8*									5.95 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	4.30 *T2,C16, R3*	4.30 *T2,C16, R3*				6.45 *T2*	4.225 *T2,R3*			6.45 *T2*	5.75 *R3, T2*
	Houston, Ft. Worth, Lone Star, Tex.	4.55 *S2*	4.55 *S2*		5.325 *S2*		6.70 *S2*	4.55 *L3* 4.275 *S2*		5.85 *S2*	6.50 *S2*	6.00 *S2*

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown, O.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.
D5 Henry Disston & Sons, Inc., Philadelphia

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Div., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Northeastern Steel Corp., Bridgeport, Conn.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P12 Pacific Steel Rolling Mills, Seattle
P13 Phenox Mfg. Co., Joliet, Ill.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wycoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.

Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Youngstown *R3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fontana *K1*	10.75	+4.5	13.75	+0.5	16.25	3.0	18.75	3.75	19.25	4.75	19.75	5.25	21.25	5.0								
Pittsburgh *J3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Alton, Ill. *L1*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Sharon *M3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fairless *N2*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Pittsburgh *N1*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Wheeling *W5*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Wheatland *W4*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Youngstown *Y1*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Indiana Harbor *Y1*	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0								
Lorain *N2*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Youngstown *R3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Fairless *N2*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Fontana *K1*	14.25		18.25		20.25		20.75		21.25		21.75		22.25									
Pittsburgh *J3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Alton, Ill. *L1*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.25	32.75	19.25	33.25	18.0								
Sharon *M3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Pittsburgh *N1*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Wheeling *W5*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Wheatland *W4*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Youngstown *Y1*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Indiana Harbor *Y1*	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	20.75	34.25	19.0								
Lorain *N2*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75

Threads only, buttweld and seamless 2¼ pt higher discount. Plain ends, buttweld and seamless, 3-in. and under, 4½ pt higher discount. Buttweld jobbers discount, 5 pct.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ incl. per lb, East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt. e.g., zinc price range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 12.00¢ per lb.

Steel Prices

(Effective May 3, 1955)

To identify producers, see Key on preceding page.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *U1*	4.45	5.35	5.425				
So. Chicago *R3*				7.30			
Ensley *T2*	4.45	5.35					
Fairfield *T2*		5.35		7.30		5.275	
Gary *U1*	4.45	5.35				5.275	
Ind. Harbor *I3*	4.45		5.425	7.30		5.275	
Johnstown *B3*		5.35					
Joliet *U1*		5.35	5.425				
Kansas City *S2*				7.30			11.50
Lackawanna *B3*	4.45	5.35	5.425			5.275	
Minnequa *C6*	4.45	5.85	5.425	7.30		5.275	11.50
Pittsburgh *O1*					11.00		11.50
Pittsburgh *P5*					11.00		11.50
Pittsburgh *J3*				7.30			
Seattle *B2*				7.80		5.425	12.00
Steelton *B3*	4.45		5.425			5.275	
Struthers *Y1*				7.30			
Torrance *C7*						5.425	
Williamsport *S5*		5.35					
Youngstown *R3*				7.30			

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	8.025	8.225	
Armature	8.50	8.75	9.25
Elect.	9.10	9.35	9.85
Motor	10.10	10.35	10.85
Dynamo	11.00	11.25	11.75
Trans. 72	11.95	12.20	12.70
		Grain Oriented	
Trans. 65	12.50		
Trans. 58	13.00	Trans. 80	16.60
Trans. 52	14.00	Trans. 73	17.10

Producing points: Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*N5*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville (*A7*).

* Coils 75¢ higher.

CLAD STEEL

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa., *L4*	*33.60	
Washington, Pa., *J2*		
Claymont, Del., *C4*		
New Castle, Ind., *I2*		29.75
Nickel-carbon		
10 pct. Coatesville, Pa., *L4*	39.50	
Inconel-carbon		
10 pct. Coatesville, Pa., *L4*	47.90	
Monel-carbon		
10 pct. Coatesville, Pa., *L4*	40.80	

* Includes annealing and pickling, sandblasting.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Annl'd ¢/lb.	Merch. Wire* Galv. ¢/lb.
	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City *R3*	137	146		155	159	6.90	7.30
Aliquippa, Pa. *J3*	137	149			156	6.90	7.45
Atlanta *A8*	138	151		157	164	7.00	7.525
Bartonsville *K2*	139	151		157	164	7.00	7.55
Buffalo *W6*						6.90	7.30
Chicago, Ill. *N4*	137	149		155	162	6.90	7.45
Cleveland *A6*	142						
Cleveland *A5*						6.90	
Crawfordsville *M4*	139	151		157	159	7.00	7.55
Donora, Pa. *A5*	137	149		155	162	6.90	7.45
Duluth *A5*	137	149	150	155	162	6.90	7.45
Fairfield, Ala. *T2*	137	149		155	162	6.90	7.45
Galveston *D4*	139						
Houston *S2*	142	154			164	7.15	7.70
Johnstown, Pa. *B3*	137	149			162	6.90	7.45
Joliet, Ill. *A5*	137	149		155	162	6.90	7.45
Kokomo, Ind. *C9*	139	148		157	161	7.00	7.55
Los Angeles *B2*						7.85	
Kansas City *S2*	142	158		167	164	7.15	7.90
Minnequa *C6*	142	151	155	168	164	7.15	7.55
Monessen *P6*	137	151			163	6.90	7.45
Moline, Ill. *R3*			155				
Pittsburg, Cal. *C7*	156	172		179	182	7.85	8.40
Portsmouth *P7*						6.90	7.90
Rankin, Pa. *A5*	137	149			162	6.90	7.45
So. Chicago *R3*	137	146	150	155	159	6.90	7.30
S. San Francisco *C6*					179		
Sparrows Pt. *B3*	139			157	164	7.00	7.55
Struthers, O. *Y1*						6.90	7.55
Worcester *A5*	143					7.20	
Williamsport, Pa. *S5*			150				

Cut Nails, carloads, base $8.30 per keg at Conshohocken Pa. (*A2*). Galvanized products computed with zinc at 11.0¢ per lb. Exceptions: Alabama City and So. Chicago computed with zinc at 5¢.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, New Britain, Conn. *N8*	5.75	8.05	9.00	11.15	13.85
Buffalo, N. Y. *R7*	5.75	8.05	9.00	10.95	13.25
Carnegie, Pa. *S9*		8.05	9.00	11.15	13.85
Cleveland *A5*	5.75	8.05	9.00	11.15	13.85
Detroit *D1*	5.85	8.25	9.20	10.95	
Detroit *D2*	5.85	8.25	9.20		
Harrison, N. J. *C11*			9.30	11.45	14.15
Indianapolis *C5*	6.00	8.20	9.00	11.15	13.85
New Castle, Pa. *B4*	5.75	8.05	9.00	10.95	
New Haven, Conn. *D1*	6.20	8.35	9.30	11.25	
Pawtucket, R. I. *N7*	6.30	8.35	9.30	11.45	14.15
Riverdale, Ill. *A1*	5.85	8.05	9.00	11.15	13.85
Sharon, Pa. *S1*	5.75	8.05	9.00	11.15	13.85
Trenton *R4*		8.35	9.30	11.25	13.40
Wallingford *W1*	6.20	8.35	9.30	11.45	14.15
Warren, Ohio *T4*	5.75	8.05	9.00	11.15	13.85
Weirton, W. Va. *W3*	5.85	8.05	9.00	10.95	13.25
Worcester, Mass. *A5*	6.60	8.35	9.30	11.45	14.15
Youngstown *C5*	5.85	8.05	9.00	11.15	13.85

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	28.33	33.97	27.48	32.95
	2½	12	38.15	45.74	37.00	44.36
	3	12	44.05	52.82	42.72	51.23
	3½	11	51.43	61.66	49.88	59.81
	4	10	68.29	81.88	66.24	79.42
National Tube	2	13	28.33	33.97	27.48	
	2½	12	38.15	45.74	37.00	
	3	12	44.05	52.82	42.72	
	3½	11	51.43	61.66	49.88	
	4	10	68.29	81.88	66.24	
Pittsburgh Steel	2	13	28.33	33.97		
	2½	12	38.15	45.74		
	3	12	44.05	52.82		
	3½	11	51.43	61.66		
	4	10	68.29	81.88		

WAREHOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: As rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	$.20	6.02	7.51	7.64–7.78	6.89		6.37	6.72	6.68	8.02	12.94	12.54	15.34	15.19
Birmingham	.15	6.35–6.50	7.35–8.10	8.25–9.00	6.60	8.85	6.65	6.65	6.50	8.85				
Boston	.10	7.23	8.23	9.52	7.47	9.65–9.85	7.37	7.49	7.20	8.60	12.85–13.00	12.60	15.40	15.25
Buffalo	.25	6.35	7.40	6.75–8.84	6.70	7.02	6.65	6.70	6.50	7.40	12.70	12.15–12.40	15.10	14.80–14.95
Chicago	.20	6.38	7.38	8.30	6.62		6.52	6.69	6.51	7.25	12.25	12.05	14.60	14.70
Cincinnati	.20	6.49–6.53	7.37–7.42	8.25–8.30	6.86–6.91		6.81–6.86	6.91	6.75–6.80	7.55	12.55	12.35	14.90	15.00
Cleveland	.20	6.38	7.38	8.25	6.72		6.69	7.02	6.57	7.35	11.96	12.11		14.76
Denver		8.15	9.00	10.72	8.40		8.10	8.15	8.30	9.02				17.12
Detroit	.20	6.57	7.57	8.58	6.90		6.80	7.16	6.79	7.54	12.65	12.25	15.05	14.80–14.90
Houston	.20	7.35	7.80	9.03	7.70		7.35	7.60	7.70	9.30–9.40		13.25		
Kansas City	.20	7.05	8.05	8.97	7.29		7.19–7.30	7.36	7.18	8.02		12.72		
Los Angeles	.10	7.50	9.35	9.95	7.85		7.45	7.65	7.45–7.55	10.15*		13.45		16.60
Memphis	.10	6.79	7.69		6.90		7.01	7.09	6.88	8.24				
Milwaukee	.20	6.47	7.47	8.21–8.39	6.71		6.61	6.86	6.60	7.44	12.34	12.14	14.69	14.79
New Orleans	.15	6.70	7.65	9.23	6.80		6.90–6.95	7.05	6.80	8.60–10.70				
New York	.10	6.97–7.07	7.78–8.56	8.79[1]–8.99	7.36–7.56	10.15	7.07–7.27	7.13–7.38	7.30–7.37	8.63–8.83[2]	12.63	12.43		15.08
Norfolk	.20	7.00			7.10		7.10	7.10	7.10	8.60				
Philadelphia	.10	6.19–6.29	8.09	8.38[4]	7.06		6.59	6.64	6.84	7.86	12.61–12.66	12.36–12.66	15.06	14.91
Pittsburgh	.20	6.38	7.38	8.30–8.50	6.72–6.75		6.52	6.69	6.51	7.35	12.25	12.05	14.60	14.70
Portland	.20	7.00	7.75	8.90–9.05	7.25		6.85	7.00	7.05	10.20–11.70				
Salt Lake City	.20	7.65	10.20	10.70	9.05		7.70	7.70–8.85	8.00	10.95				
San Francisco	.20	7.35	8.95	9.35–9.85	7.80		7.40	7.50	7.35	10.05*		13.35		16.50
Seattle	.00	8.10	9.80	10.15	8.20		7.80	7.75	7.80	10.95		13.80		16.45
St. Louis	.20	6.62–6.67	7.67	8.54–8.59	6.91	8.13	6.81	7.00	6.80	7.64	12.54	12.34	14.84–14.89	14.99
St. Paul	.20	7.04	8.03–8.59	8.96	7.28		7.18	7.35	7.17	8.01		12.56		15.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.

Exceptions: (1) 1500 to 9999 lb. (2) 1000 lb or over. (3) $.25 delivery. (4) 1000 to 1999 lb, $.25 delivery.

* Plus analysis charge.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb
18	4	1	—	—	$1.54
18	4	1	—	5	2.245
18	4	2	—	—	1.705
1.5	4	1.5	8	—	.90
6	4	2	6	—	1.29

High-carbon chromium	.73
Oil hardened manganese	.405
Special carbon	.37
Extra carbon	.31
Regular carbon	.26

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	$111.80 to $115.30
6 to 24-in., del'd N. Y.	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50

6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less ....$129.50 to $131.50

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a tone above 6-in.

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective for 1955 season.

	Gross Ton
Openhearth lump	$11.25
Old range, bessemer	10.40
Old range, nonbessemer	10.25
Mesabi, bessemer	10.25
Mesabi, nonbessemer	10.10
High phosphorus	10.00

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$12.75 to $13.25
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $17.50
Foundry, oven coke	
Buffalo, del'd	$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.00
Swedeland, Pa., f.o.b.	23.00
Painesville, Ohio, f.o.b.	25.50
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	22.00	48	110	10.90
20	72	21.25	40	100, 110	9.50
16 to 18	72	21.00	35	110	9.50
14	72	22.00	30	110	9.60
12	72	22.25	24	72 to 84	9.85
9 to 10	60	22.75	20	60	9.85
7	60	23.00	17	72	9.85
6	60	25.50	14	72	10.25
4	40	26.50	10, 12	60	11.10
3	40	30.00	8	60	11.40
2½	30	30.75			
2	24	47.75			

* Prices shown cover carbon nipples.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts

	Discount Less Case	C.
½ in. & smaller x 4 in. & shorter	2	22
½ in. & smaller x 6 in. & shorter	+3	18
9/16 in. & ⅝ in. x 6 in. & shorter	+4	17
¾ in. & larger x 6 in. & shorter	+6	15
All diam. longer than 6 in.	+15	8
½ in. & smaller x 6 in. & shorter	+3	18
Lag, all diam. x 6 in. & shorter	6	25
Lag, all diam. longer than 6 in.	+2	19
Plow bolts	23	23

Nuts, H.P., C.P., reg. & hvy.

	Base Discount	*Discount, Case or Keg*
¾" or smaller	55	64
⅞" to 1¼" inclusive	58	66
1¼" to 1½" inclusive	60	67½

C.P. Hex. regular & hvy

All sizes	55	64

Hot Galv Nuts (all types)

¾" or smaller	38	50
⅞" to 1½" inclusive	41	52½

Finished, Semi-finished, Slotted or Castellated Nuts

All sizes	55	66

Rivets

	Base per 100 lb
½ in. & larger	$9.25
	Pct Off List
7/16 in. and smaller	37

Cap Screws

	Discount Bright	*H.C. Heat Treated*
New std. hex head, packaged 5/8" x 6" and smaller and shorter	38	28
¾", ⅞", 1" x 6" and shorter	15	1
New std. hex head, bulk* 5" x 6" and smaller and shorter	50	42
¾", ⅞", 1" x 6" and shorter	32	21

*Minimum quantity per item:
15,000 pieces ¼", 5/16", ⅜" diam.
5,000 pieces 7/16", ½", 9/16", ⅝" diam.
2,000 pieces ¾", ⅞", 1" diam.

Machine Screws & Stove Bolts

		Discount Mach. Screws	Stove Bolts
Packaged, package list		33	43
Bulk, bulk list	*Quantity*		
¼-in. diam. & under	15,000- 99,999	17	59
	100,000-199,999	25	63
	200,000 & over	33	67
5/16-in. diam. & larger	15,000- 49,999	17	59
	50,000- 99,999	25	63
	100,000 & over	33	67
All diam. over 3 in. long	5,000- 49,999	...	59
	50,000- 99,999	...	63
	100,000 & over	...	67

Machine Screw & Stove Bolt Nuts

		Discount Hex	Square
Packaged, package list		30	33
Bulk, bulk list	*Quantity*		
⅜-in. diam. & smaller	15,000- 99,999	15	17
	100,000-199,999	23	25
	200,000 & over	31	33

REFRACTORIES

Fire Clay Brick *Carloads per 1000*

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$114.00
No. 1 Ohio	107.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	107.00
No. 2 Ohio	98.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	17.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$120.00
Childs, Hays, Pa.	125.00
Chicago District	130.00
Western Utah	...
California	...
Super Duty Hays, Pa., Athens, Tex., Windham	137.00
Curtner, Calif.	155.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	20.00
Silica cement, net ton, bulk, Hays, Pa.	22.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	21.00
Silica cement, net ton, bulk, Utah and Calif.	...

Chrome Brick *Per net ton*

Standard chemically bonded, Balt.	$86.00
Standards chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite *St. ⅜-in., grains*

Domestic, f.o.b. Baltimore in bulk fines removed	$64.40
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.	
in bulk	38.00
in sacks	43.75

Dead Burned Dolomite *Per net ton*

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$14.50
Midwest	15.10
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; effective CaF_2 content.

72½%	$44.00
70% or more	42.50
60% or less	38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	11.25¢
Canadian sponge iron, Del'd in East	12.0¢
F.o.b. ship. pt., carloads	9.5¢
Domestic sponge iron, 98+% Fe, carload lots	9.5¢
Electrolytic iron, annealed, 99.5+% Fe	38.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	53.5¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	83.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	51.50¢
Copper, reduced	51.50¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd	$3.60
Lead	23.50¢
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	43.50¢
Solder powder	7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	91.0¢
Stainless steel, 316	$1.10
Tin	14.0¢ plus metal value
Tungsten, 99% (65 mesh)	$4.05
Zinc, 10 ton lots	17.5¢ to 25.0¢

Ferroalloy Prices

(Effective May 3, 1955)

Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd, 65-72% Cr, 2% max Si.

0.025% C .. 36.00	0.15% C ...	33.75
0.025% C, Simplex .. 34.50	0.20% C ...	33.50
	0.50% C ...	33.25
0.06% C ... 34.50	1.00% C ...	33.00
0.10% C ... 34.00	2.00% C ...	32.75

65-69% Cr, 4-9% C 24.75
62-66% Cr, 4-6% C, 6.9% Si 25.60

S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60.55% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	25.85
Ton lots	28.60
Less ton lots	29.30

High Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	$1.15
0.50% max. C	1.16
9 to 11% C	1.25

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, 34.75¢ per lb contained Cr plus 12.00¢ per lb contained Si. Bulk 2-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 2.00 max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	22.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.60
Ton lots	22.30
Less ton lots	22.70

SMZ

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	16.60
Ton lots	18.10
Less ton lots	19.35

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	17.50
Ton lots to carload packed	18.50
Less ton lots	20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	9.50
Clairton, Pa.	9.50
Sheridan, Pa.	9.50
Philo, Ohio	9.50

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	11.85
Ton lots packed	13.65

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 3.5% max. Fe.

Carload, packed	45.00
Ton lots	43.50

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	30.00
Ton lots	32.00
250 to 1999 lb	34.00
Premium for hydrogen-removed metal	0.75

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	32.00	33.85	35.05
0.07% max. C	29.95	31.80	33.80
0.15% max. C	28.45	30.30	31.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk	11.00
Ton lots	12.65
Briquet contract basis carlots, bulk, delivered, per lb of briquet	12.45
Ton lots, packed	14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $85.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $88.00. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton lots	Carloads
96% Si, 2% Fe	20.10	18.00
97% Si, 1% Fe	20.60	18.50

Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.55
Ton lots	8.35

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.40
50% Si	12.00	85% Si	16.10
65% Si	13.50	90% Si	17.25

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract basis, delivered, per pound, contained V.

Openhearth	$3.00-$3.10
Crucible	3.10- 3.20
High speed steel (Primos)	3.20- 3.25

Alsifer, 20% Al, 40% Si, 40% Fe.

Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	9.25¢
Ton lots	10.15

Calcium molybdate, 46.3-46.6%

f.o.b. Langeloth, Pa., per pound contained Mo $1.35

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots	$12.00
Less ton lots	12.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd, ton lots, 2-in. x D per lb cont'd Cb plus Ta..... $6.25

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.46

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $90.00
10 tons to less carload $110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton $177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. $3.80

Molybdic oxide, briquets, per lb contained Mo, f.o.b. Langeloth, Pa. $1.27
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.24

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb.

Carload, bulk, lump	15.50¢
Ton lots, packed lump	16.75¢
Less ton lots, lump, packed	17.25¢

Vanadium Pentoxide, 86 - 89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.28

Zirconium, contract basis, per lb of alloy.

35-40%, f.o.b. freight allowed, ton lots	26.00¢
12-15%, del'd, lump, bulk-carloads	8.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 3.14%, Si, 40-45%, per lb contained B.... $5.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-3%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in., x D, Ton lots... $1.20
F.o.b. Wash., Pa.; 100 lb up

10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over

No. 1	$1.00
No. 6	63¢
No. 79	50¢

Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 2.00% max. C, 2 in. x D, del'd.

Ton lots	$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd, less ton lots $2.05

Silcas, contract basis, delivered.

Ton lots ..... 45.00¢

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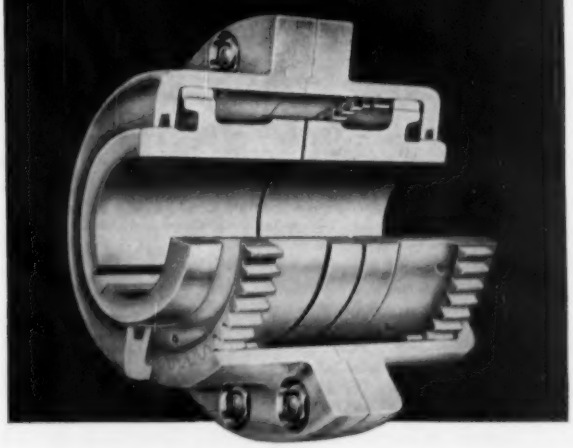
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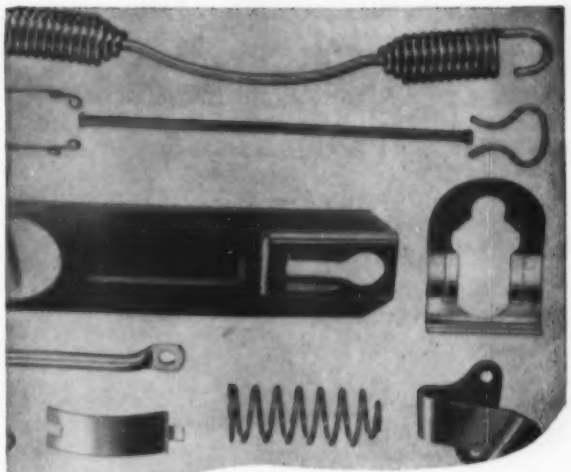
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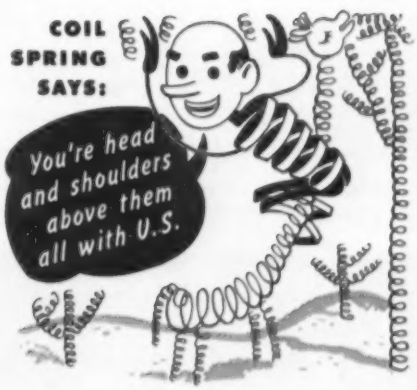
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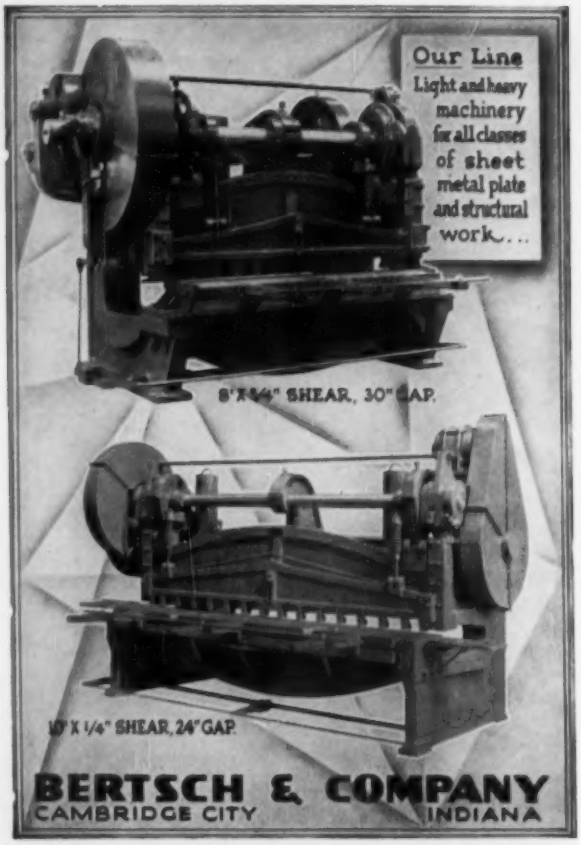
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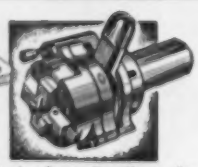
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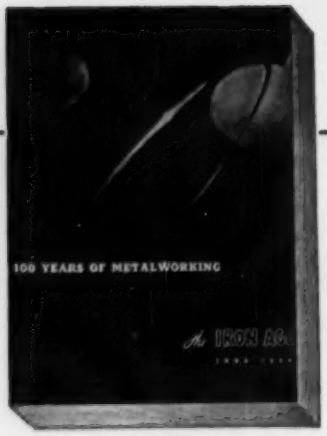
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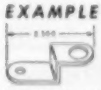
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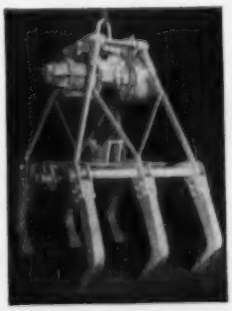


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News of Used and Rebuilt Machinery

All's Well in West . . . Demand for all types of used machinery is strong . . . Business is good . . . Things are moving well . . . Everybody's happy . . . There are plenty of sales, and supply problems aren't too much of a worry.

That's the consensus of opinion among southern California used machinery dealers checked by THE IRON AGE.

Behind this optimism are three factors: (1) a lot of new and expanding companies on the West Coast are providing steady demand; (2) many companies are buying later-model used machines to bring production facilities more up-to-the-minute; and (3) a good number of medium- and small-sized firms, short on storage space for old equipment, are putting machines in the dealers' hands.

Replace and Expand . . . Dealers estimate about half of today's buying is for replacement, half for expansion. And there's a trend towards buying old machines for conversion. Anything with a big table goes pretty fast. It's particularly true of planers, sought for conversion to duplicators or skin millers.

In the Los Angeles area, turret and engine lathes, slow movers for quite a while, are showing new signs of life. There's a definite pickup in demand for these machines. The oil industry is a noticeable big new customer.

Mills Move Fast . . . Drill presses, milling machines, planers, and heavy lathes are moving briskly. Small vertical mills for die work are a hot item. Dealers don't keep them more than a day or two—and they sell for near-new prices.

Vertical boring machines are dragging, except in late models, and dealers say they're loaded with them. But horizontal boring machines are moving quite well.

Late-model radial drills, fast-sellers for several months, are still a hot item. But the supply is getting short.

And there's a nice turnover of grinders.

Electronic Growth Helps . . . California's fast-expanding electronics industry leads the way in an active sheet metal equipment market. Dealers are jumping, too, to keep the home-building construction industry supplied. Heaviest demand is for shears and brakes, with punch presses close behind.

Buyers aren't finding it too easy to get good late-model machines. The supply of press brakes is tightening up. But the dealers still don't seem worried and think they can keep their customers satisfied.

Welding equipment in the large sizes isn't going too quickly. But not so with small electric welders —they're moving very well, keeping pace with sales of sheet metal equipment.

Bay Picture Varies . . . In the San Francisco Bay Area, the used machinery business ranges from "quiet" to "good"—depending on the firm you talk to. Good machinery tops the demand with standard equipment the leading movers.

Most firms feel the outlook for the second quarter is fairly bright.

One company complained that "everything is quiet now" and spoke with envy of the much better business his firm's branch in Los Angeles is doing. "They sell more by accident there than we do here on purpose," he says.

Another spokesman, who suggested the used machinery business in the immediate San Francisco area is a bit on the down side, indicated this is offset by stronger demand in other northern California areas. Even inquiries in the Bay Area, he indicated, are lagging, in contrast with the rest of the state.

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100,000# Poole Draw Bench, 39' Length of Draw
100,000# Aetna Standard, 50' Length of Draw

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1" 1½" 2½" Acme
1" 2½", 3", 3½, 4", 5" Ajax
5" National
7½" National—Air Clutch

FURNACE—MELTING
2 ton Whiting Hydro Arc, Top Charge

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3000 lb. Chambersburg Model J, Motor Driven
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52" Aetna Standard 17 Rolls 2½" Dia.
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54" Aetna Standard 17 Rolls 4½" Dia.
60" Aetna Standard 17 Rolls 4⅝" Dia.
72" McKay 15 Rolls 4½" Dia.
76" Voss-Ungerer, 23 Work Rolls 2.165" Dia. Capacity 22 to 13 Gauge Mild Steel

PLATE EDGE PLANERS
25 ft. Southwark, Capacity 1½"
25 ft. Hilles & Jones, Capacity 1¼" Plate

PRESSES—HYDRAULIC
500 ton Wood 4-Columns, 24" Stroke, 72" x 96" Between Columns
1200 ton Birdsboro 4-Columns, 20" Stroke 30" x 36" Between Columns

PRESSES—INCLINABLE
#6½A Niagara, 150 ton, 13" Stroke
Cleveland, 125 ton, 12" Stroke

PRESSES—STRAIGHT SIDE
#304 Bliss, 8" Stroke
#308 Bliss, 255 ton, 14" Stroke
#8E Bliss 200 ton, 16" Stroke, Bed Area 108"x80"

PRESS—TOGGLE
750 ton Bliss-Toledo Model 181-S Toggle Action Press, 42" Ram Stroke, 29" Blankholder Stroke, Bed Area 156" x 62" Pitoll 66" Elect. Equip.

PUNCH & SHEAR COMBINATIONS
No. 2½ Buffalo Universal Ironworker
No. 1 Long & Allstatter Double End, Capacity Punch 1⅛" thru 1", Shear 2" Rd., 5x5x⅝" Angles
Style W Cleveland Single End, 60" Throat, 312 Ton With Attachment for Dishing Heads

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7⅛" Steckel Four High Rolling Mill
8" x 12" Blake & Johnson Single Stand Two High
10" x 14" United Three Stand Two High
12" x 16" Waterbury Farrel Temper Mill
14" x 29" Farrel Birmingham
16" x 20" Waterbury Farrel Single Stand 2-High
16" x 20" Lewis Two High Two Stand
20" x 36" Poole Two Stand Two High
22" x 58" Three High Breakdown Mill

ROLLS—PLATE STRAIGHTENING
51" Bertsch, 7 Rolls 10" Diameter
66" Bertsch, 7 Rolls 7" Diameter

SHEARS—GATE
48" x 1¼" Mackintosh-Hemphill
80" x ⅝" Pels
90" x ½" Birdsboro
11' x 1" Garrison

SHEARS—ANGLE
6x6x1" Long & Allstatter Size B
8x8x1" Long & Allstatter Size C

SHEAR—BAR
#9 Buffalo Bar Cutter, Capacity 3" sq., 3⅝" Rd.

SHEAR—BEAM
Pels DT-36-B Beam Shear, Capacity 3" to 13" I-beams 6x6x⅝" Angles, Belted Motor Drive

SHEAR—GUILLOTINE
#5 Hilles & Jones, Capacity 4½" Round, 4" Square

SHEARS—ROTARY
3/16" Quickwork Rotary Shear, 36" Throat
¼" Kling #250, With Flanging Attachment
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No. 2 Taylor Wilson Straightening Sizing & Burnishing Machine, Capacity ¼" to 1½" Tubing

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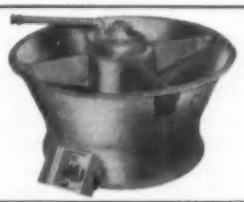
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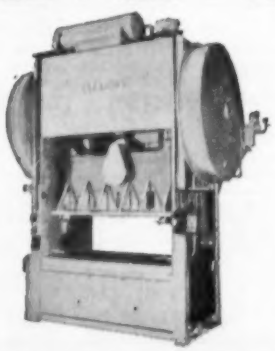
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1	1200	G.E.	MCF	600	750/950
1	940	Whse.	QM	250	140/175
1	900	Whse.		250	450/550
1	825	Whse.		250	95/190
1	600	Al. Ch.		250	600/800
1	500	Whse.	CC-316	600	300/900
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2	450	Whse.		550	415
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1	125	Whse.	8K-141	230	500/1500
1	125	Whse.	8K-148	230	850

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Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000/2400	G.E.	450	250/300	2300/4600
3	1750/2100	G.E.	514	250/300	2300/4600
1	2000	G.E.	600	25eg 600	11000
2	2000	G.E.	514	600	6600/13200
2	2000	G.E.	450	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	C.W.	514	80/115	4000/13000
1	1000	G.E.	900	250	6600
3	1000	G.E.	720	600	2300/4600
2	750	G.E.	720	275	2300/4600
1	750	C.W.	514	80/115	2300
1	600	G.E.	720	250	440/2300

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
1	5000	Whse.	OISC	3	8300x26400
1	3500	Whse.	OISC	3	26400/13200x460
3	2000	G.E.	HVDDJ	1	66000x13800
3	1000	G.E.	HVDDJ	1	2400x480
6	1000	Wagner	OISC	1	13200x460
3	667	G.E.	HD	1	12800x2300

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1	2000	Whse.	Mill	600	230/460
6	1500	Whse.	Encl.	525	600
1	1200	G.E.	MCF	600	350/700
4	800	Whse.	Encl.	525	600
1	800	Whse.	Mill	300	250/550
5	700	Whse.	Encl.	250	300/700

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Qu.	HP	Make	Type	Volts	R.P.M.
2	125	Whse.	8K-184	230	575/850
6	100	El. Dy.	8-30	230	450/1350
3	75	C.W.	T.E.F.C.	230	860
3	50	Whse.	8K-131.5	230	600/2200
3	25	Whse.	8K-93	230	1800
4	10	Whse.	8K-81	230	250/1800
4	5/7½	Rel.	T.E.F.C.	230	237/1350

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Qu.	KVA	Make	Phase	Voltage
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2	150	G.E.	3	4160/2400-240/480
1	300	G.E.	3	12,000/6900-240/480
1	300	Whse.	3	11,500-460
1	300	Al. Ch.	3	4600/2300-115/230
3	333	G.E.	1	13,200/11,880-2300/4000
3	400	Whse.	1	22,000-2300
3	1000	G.E.	1	22,000-2300/4000
6	1000	Al. Ch.	1	33,000/20,700-2300/4000

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250	L.-Allis	OGK-148	720
250	G.E.	1K-17A	600
250	Westg.	CS-14	514
200	*G.E.	FT-548Y	3600
200	*Cr. Wh.	SC	900
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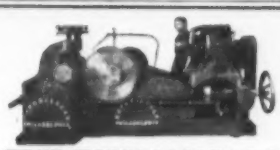


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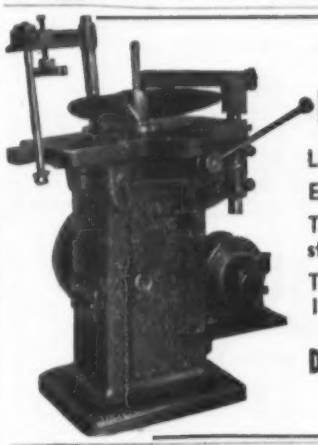
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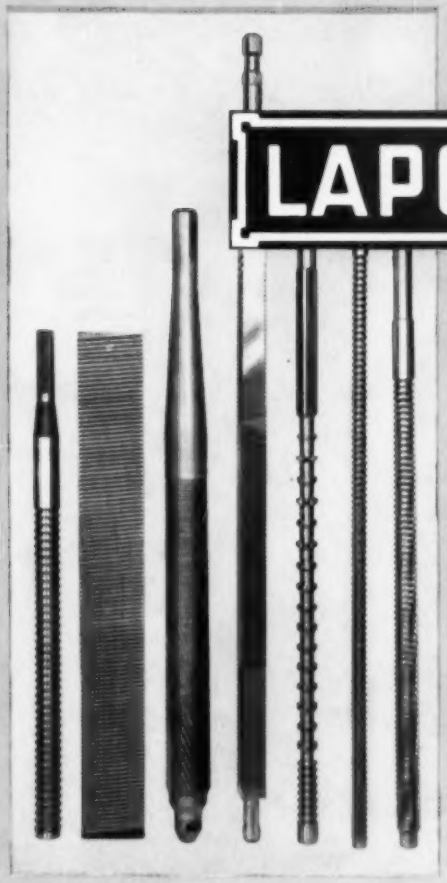
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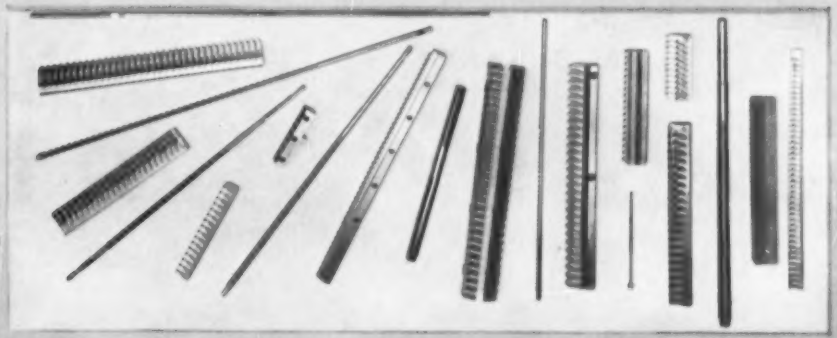
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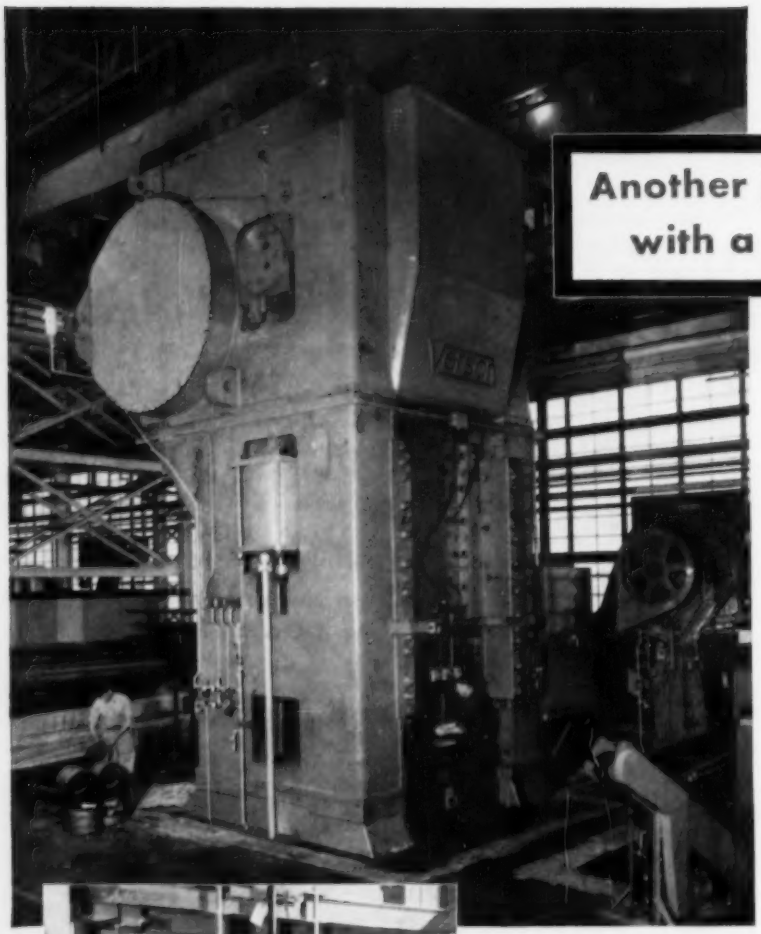
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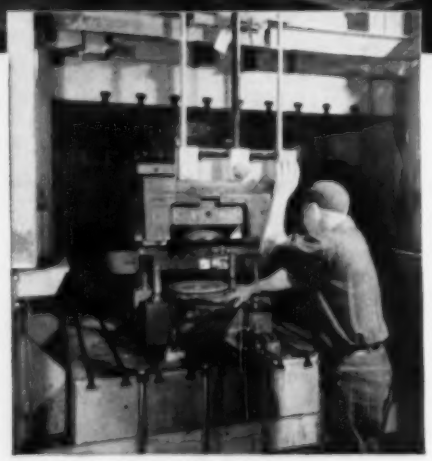
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